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THE PRICE OF WHEAT SINCE 1867

The year 1867 marks the highest point reached by the annual average price of wheat since wheat production on a considerable scale for the foreign market became a recognized feature of American farming.¹ The immediate cause of this high price was the occurrence of two successive bad seasons in 1866 and 1867.²

The wheat harvests of 1866 and 1867 gave an unusually low yield both in Europe and America; the former being worse in America and the latter in Europe.³ The American corn crop was also deficient in yield for both years, especially 1867, and of low grade. The acreage sown to wheat in America increased greatly these years, and the result was a larger aggregate production of wheat in 1867 than for some years previous. (See Chart IV.)

Such was the situation of the wheat supply after the harvest of 1867. The situation of American farming generally, so far

¹ No. 2 Spring Wheat in the Chicago market averaged \$1.43 (gold) for the year. In New York, Milwaukee Club averaged \$1.75.

² It is to be noted by way of orientation that the wheat crops available for the general market had been, on the whole, very good in 1863 and 1864; especially the former year, which was, in the United Kingdom particularly, and to a good extent in Continental Europe, the most satisfactory wheat harvest for a long series of years. Much the same is true of other grains for those years. In America the wheat crop was good in 1863, and had been excellent for two or three years previous; while in 1864 the American wheat crop was over average yield, but the acreage was smaller than the previous year, and the output was consequently somewhat short. The harvest of 1865, both in Europe and America, fell slightly short of an average yield. The harvests of the years 1863-7, taking into account the total available product, form a decreasing series, beginning with one of the very best grain crops of the century and closing with one of the worst.

³ "1866, therefore, will be memorable as a year of pestilence, war, scarcity, Irish discontent, and as a year in which occurred the most extensive and severe financial crisis of the present century;" (*London Economist*, 'Commercial History and Review,' 1867;) "The harvest of 1867 was almost universally bad or indifferent. . . . The winter of 1866-7 was exceptionally severe—especially in this country. . . . Over the whole north of Europe and a considerable part of Germany, the grain crops of 1867 were alarmingly deficient. The maize also failed to the extent of a third, or even a half. . . . The potato crop is reckoned the worst since 1845-6. . . . The only really great crops have been in Hungary and along the lower Danube." (*Ibid.* 1868)

as concerns the prices obtainable for staple products, was fairly good; but prices were better, relatively, for grains than for meat products. The average for wheat, corn, oats, beef, pork, lard, butter, in the New York market was higher for the two years 1867 and 1868 than it has been since that time.¹

1867-8 marks the summit of the price movement in farm products generally.² The trend of prices for agricultural staples in this country—and to a slightly less extent in England and on the continent of Europe—for some years previous had been upwards; from about 1863 it had been pretty strongly upwards. Since this time it has been generally downwards, broken only by an occasional temporary recovery, until the last few years. Something similar is true of the price movement of staple commodities generally, taking the period as a whole.³ But the temporary movement of general prices for the time being, at this precise point (1867-8), was not in the same direction as that of staple farm products. General prices were declining. 1867-8 was a period of depression in business generally. The industries that are not immediately dependent on the seasons had reached their highest activity, for the time, earlier than this; the speculative movement had culminated in 1866, and business was now dull. But farming did not share in the general feeling of depression that prevailed in other industries in 1867-8, nor had it shared appreciably in the buoyant, not to say feverish, activity of the years immediately preceding. In short, the forces which controlled the situation for American farming were not the same that went to make the general industrial situation. It mattered little whether general business was brisk or dull so long

¹ The prices referred to here and elsewhere in this paper, unless otherwise indicated, are gold prices averaged for the calendar year.

² This applies to what is known in Northern and Eastern markets as Farm Produce, and takes no account of cotton, tobacco, sugar or rice. These products of Southern farming, as well as wool and fruits, are hardly to be classed with grains and meat products in any discussion of prices from the standpoint of the wheat producer.

³ See the tables of Mr. AUGUSTUS SAUERBECK; *Journal of the Statistical Society*, September, 1886, and those of Dr. A. SOETBEER, in his *Materialien*.

as the seasons favored American crops and prices. And, determined by the character of the seasons, the tone of American farming was markedly depressed in 1865-6, when other industries were buoyant, and distinctly active in 1867-8, when times generally were dull.¹

With respect to methods and appliances directly affecting wheat production and wheat prices, the following facts may serve to characterize the situation at the point (1867-8) selected as the beginning of the period under discussion:

The latest great advance in wheat-farming machinery was the self-rake reaper, which was rapidly being adopted during and immediately after the war. In ocean transportation, the iron steamship was fast replacing the sailing vessels of earlier years. Inland, from western markets to the seaboard, grain was carried by water wherever that was practicable. Shipments of grain from Chicago eastward were by lake-and-canal, with virtually no all-rail or lake-and-rail competition.² Ocean freights in 1867-8 were low as compared with what they usually were both before and after that time.³ Inland freights and local

¹ The reason for this course of things seems to have been partly that the foreign demand for American farm produce was not specially urgent immediately after the war (relatively large surpluses of grain having been carried over from previous good years in Europe), partly that American crops in 1865 and 1866 were very moderate or deficient, and partly that the premium on gold was rapidly declining, so as to mask the actual advance that was taking place in agricultural staples (which for some purposes practically amounted to a decline in price). By the summer of 1866 the first and last of these causes had ceased to act. The crops for the next two years were under average, but the foreign demand increased greatly in urgency and the premium on gold remained nearly stationary. At the same time there was a marked decline in the prices of other staples—which was to the advantage of the farmer—and when 1868 proved a fair average, or at the worst a slightly deficient season, with no obtrusive ill-fortune to offset the favorable state of the markets, the farmers of the wheat producing sections had reason to be well content.

² Both wheat and corn had been received in New York from the West by rail before 1870, and, indeed, in some appreciable quantity, but these shipments were accounted a temporary and anomalous diversion rather than a serious competition with the water route.

³ There had been an "over-production" of steam tonnage during the years immediately preceding, and freights were recognized to be ruling unduly low in consequence.

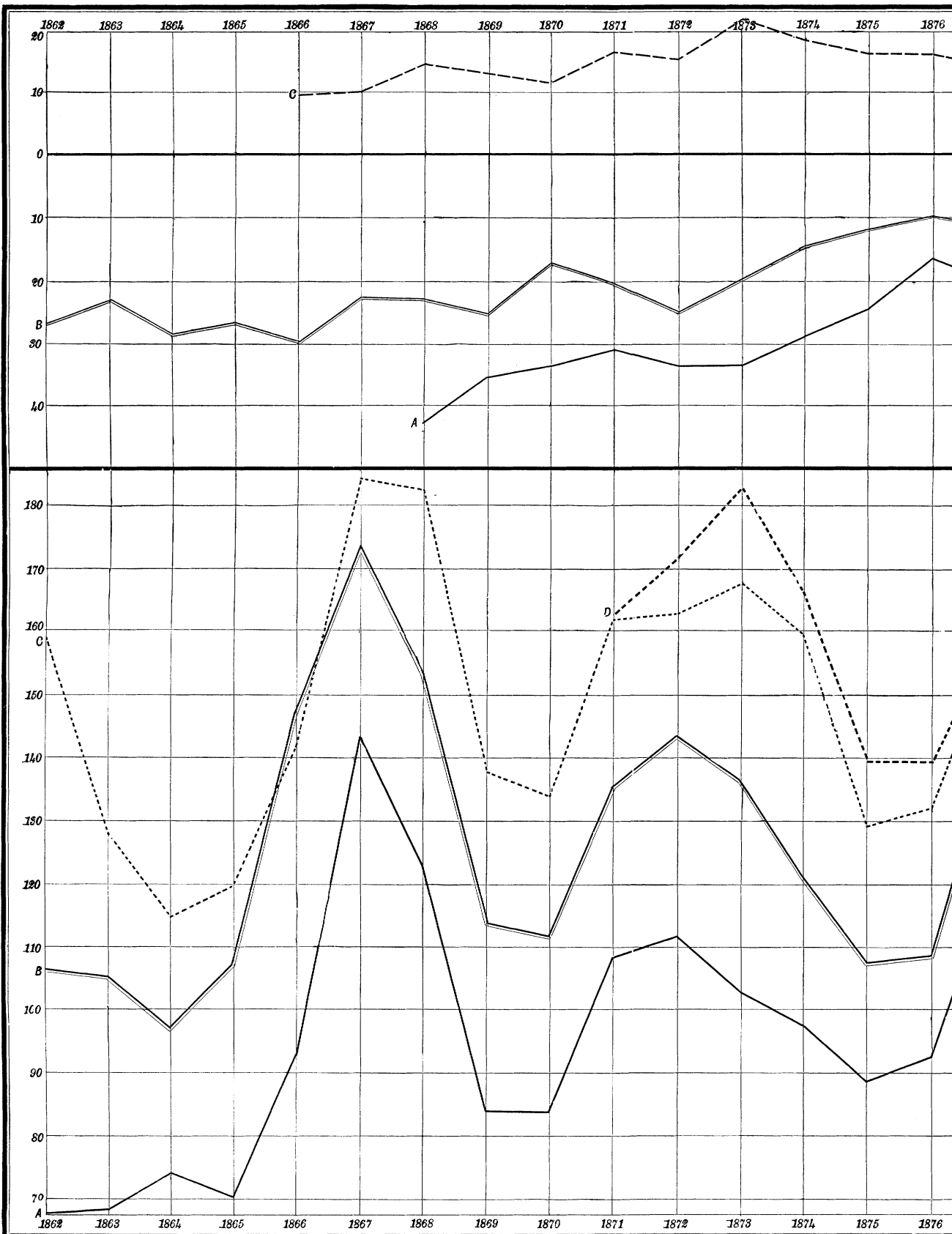
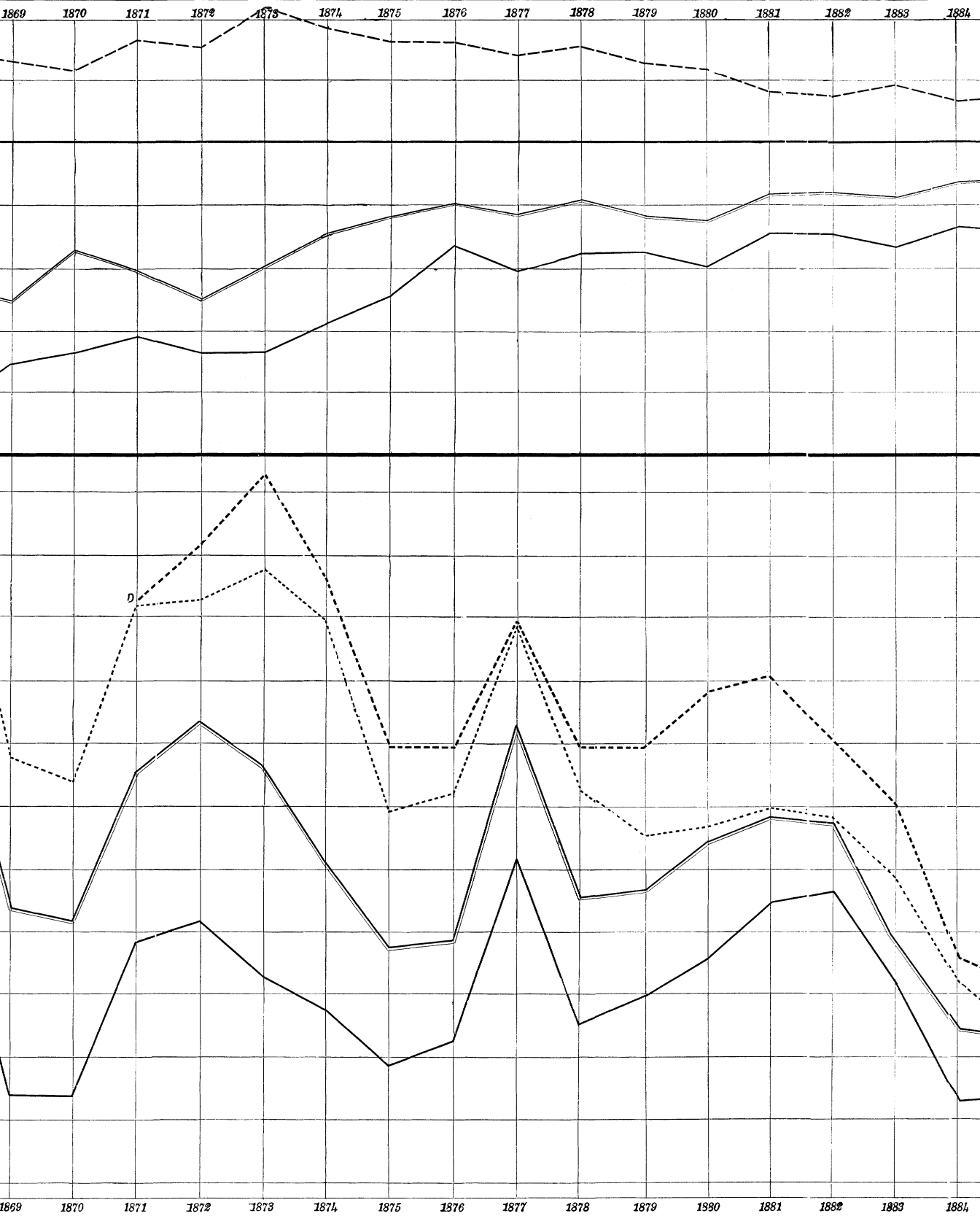
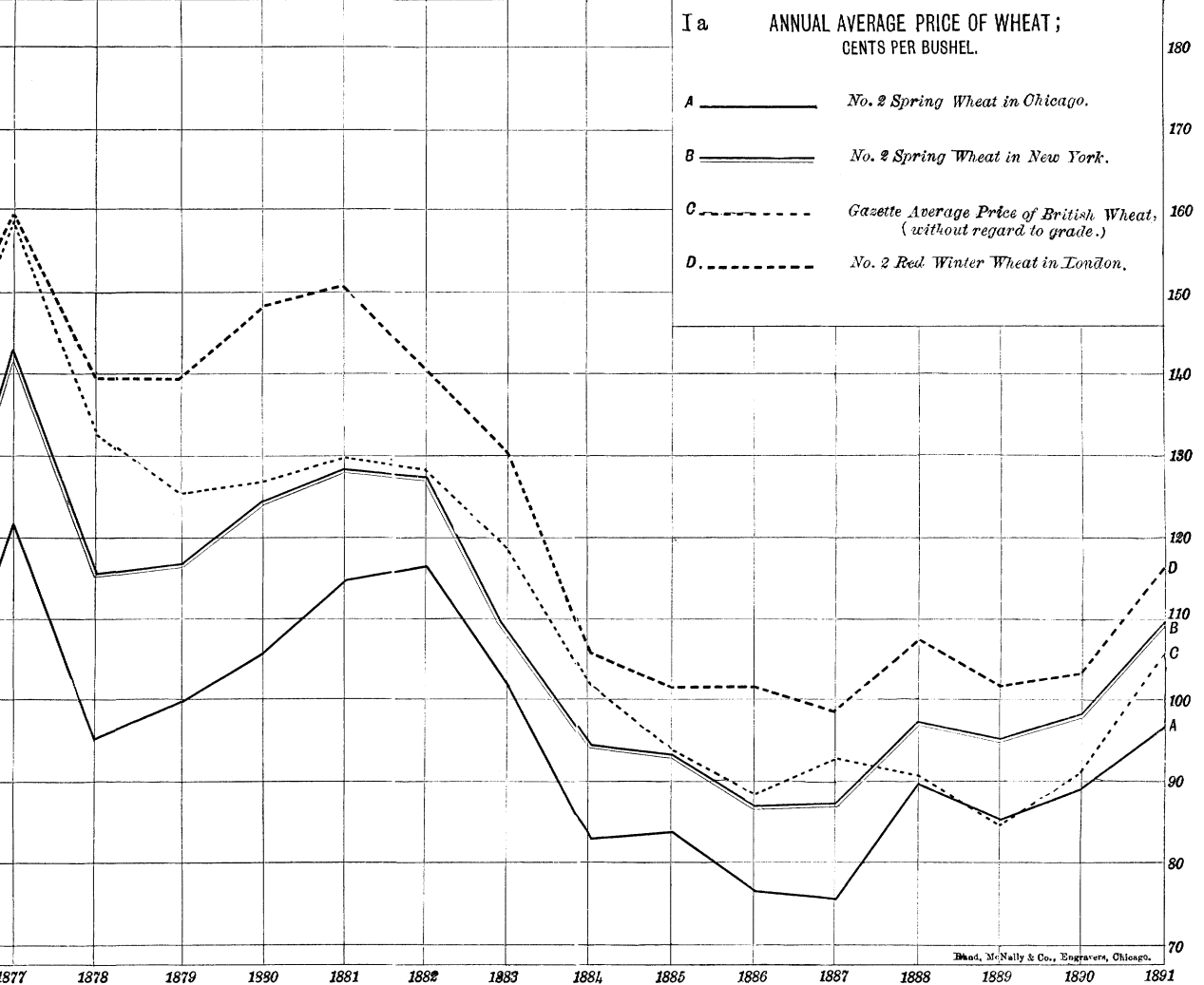
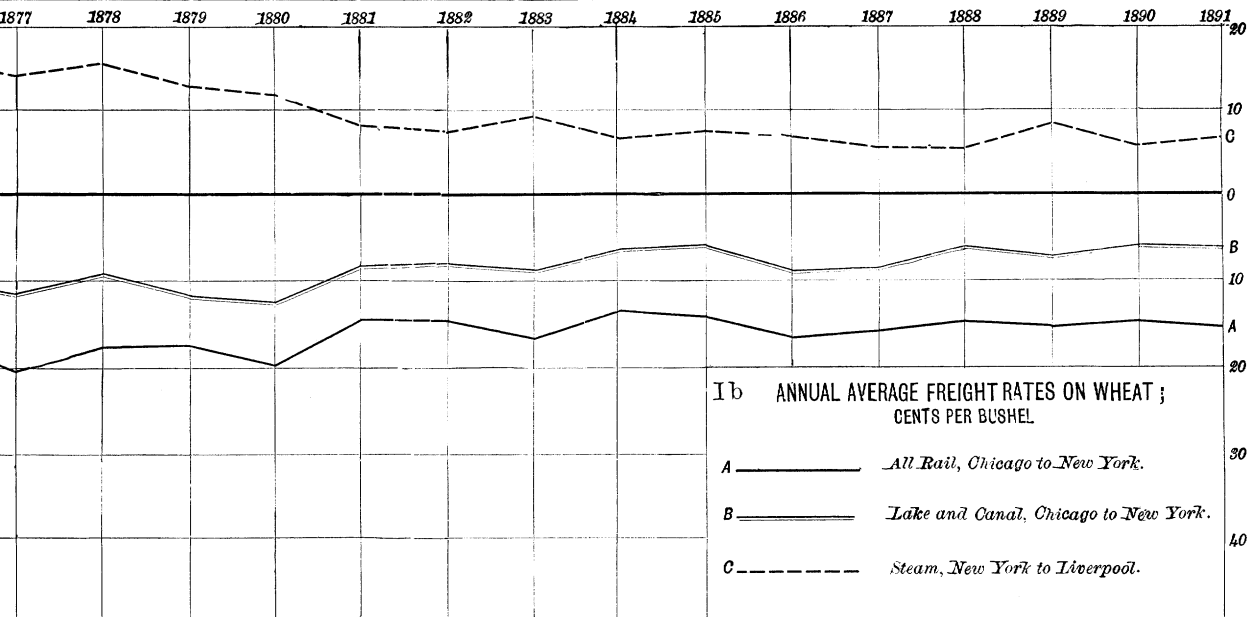


CHART I.





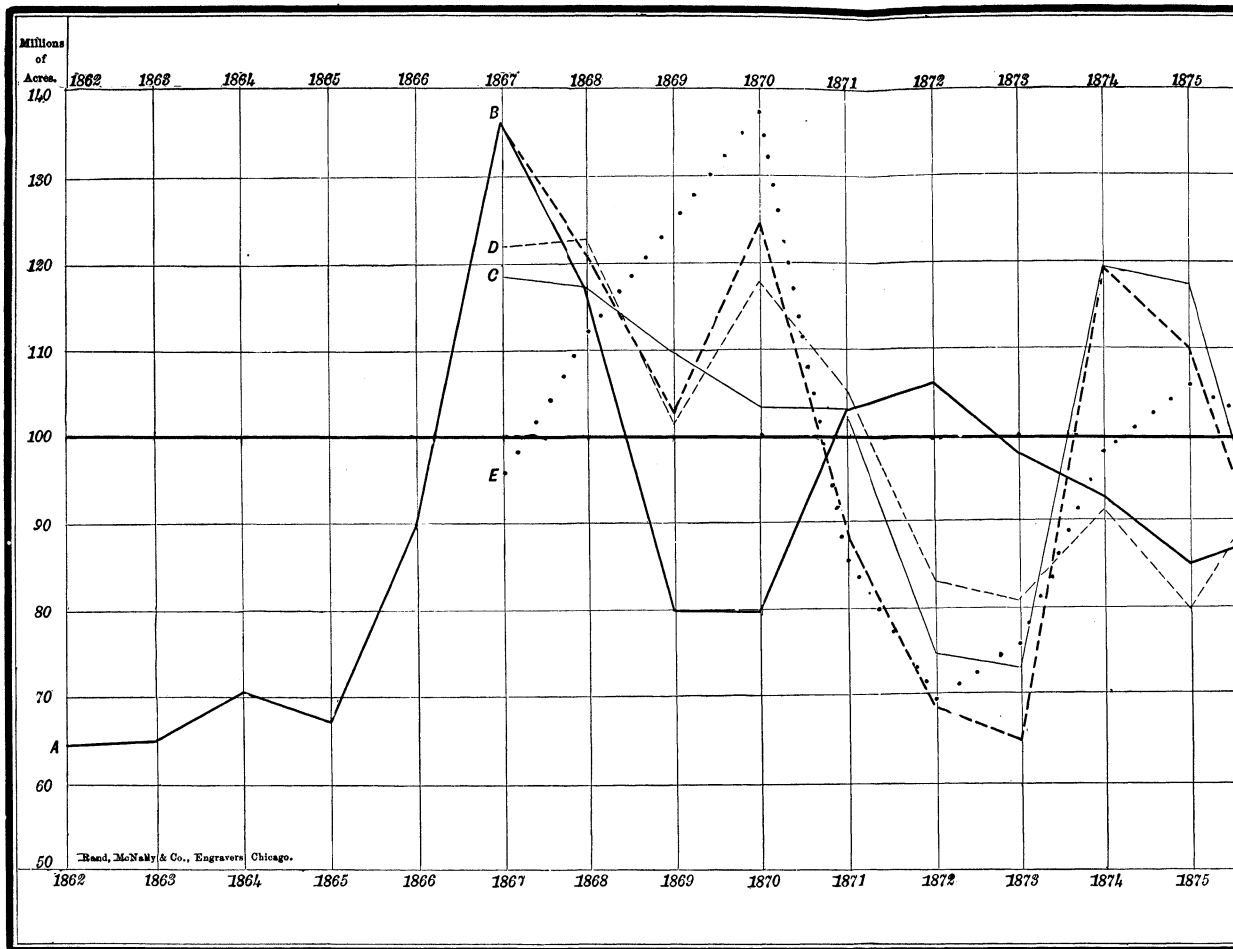
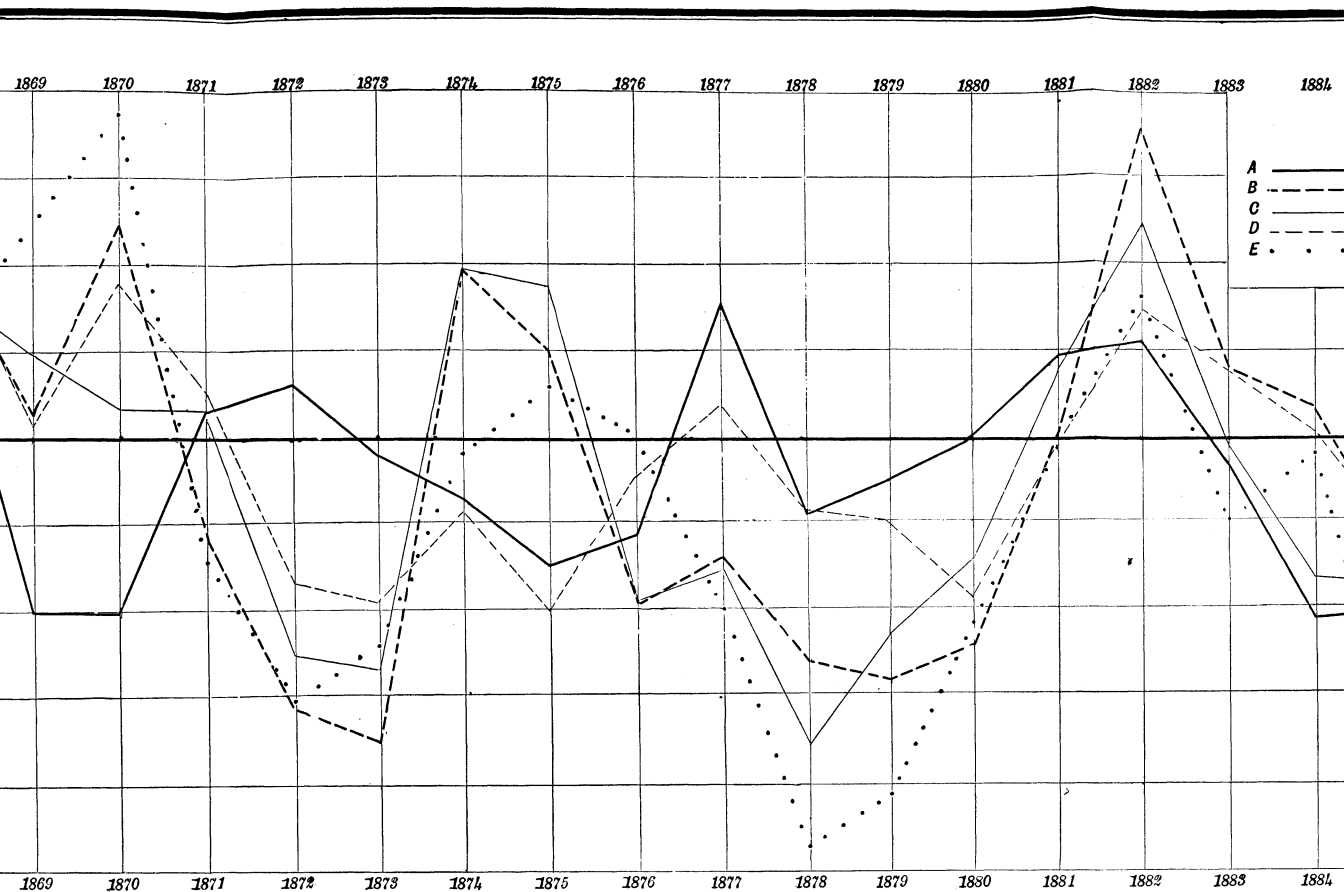


CHART II.



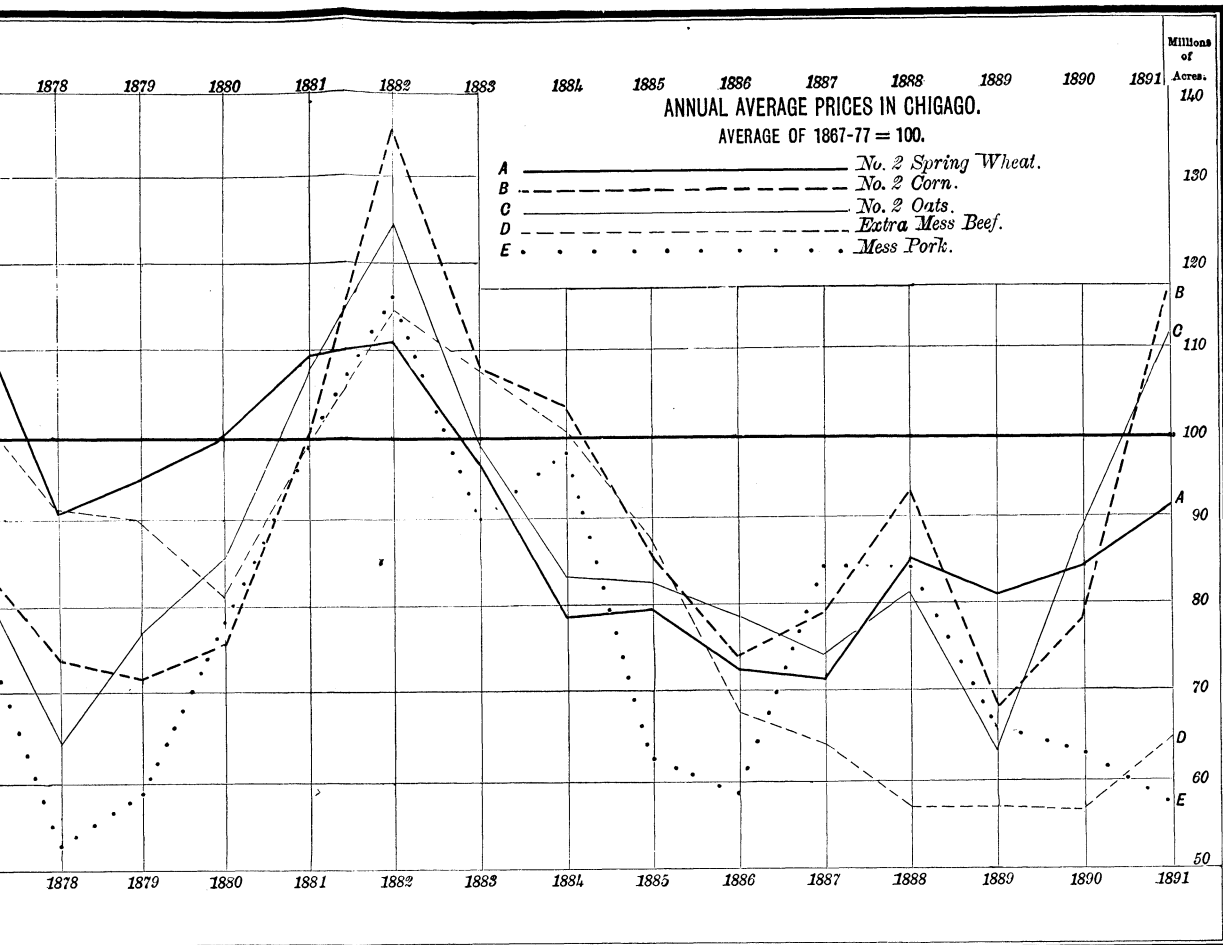


CHART III.

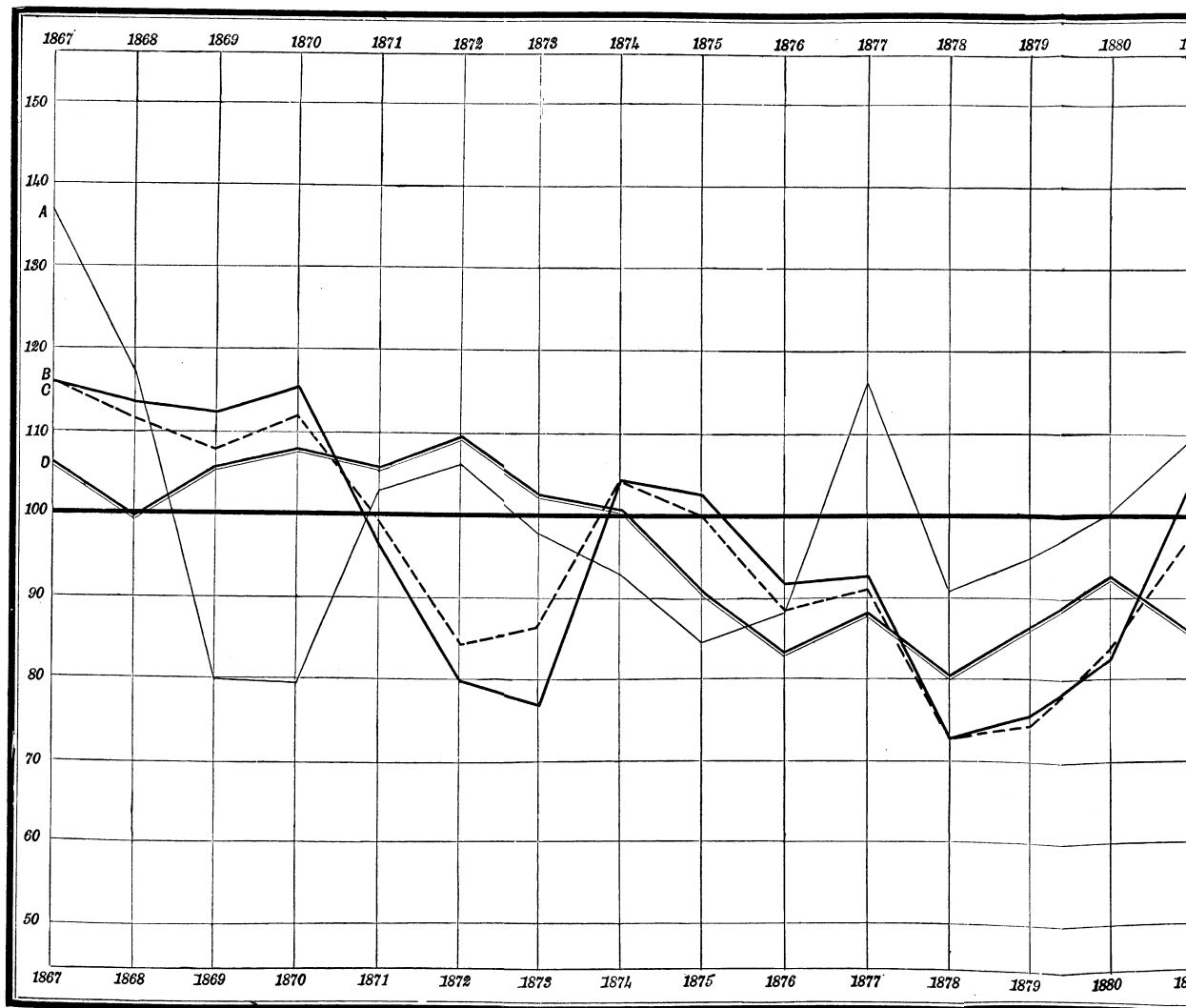
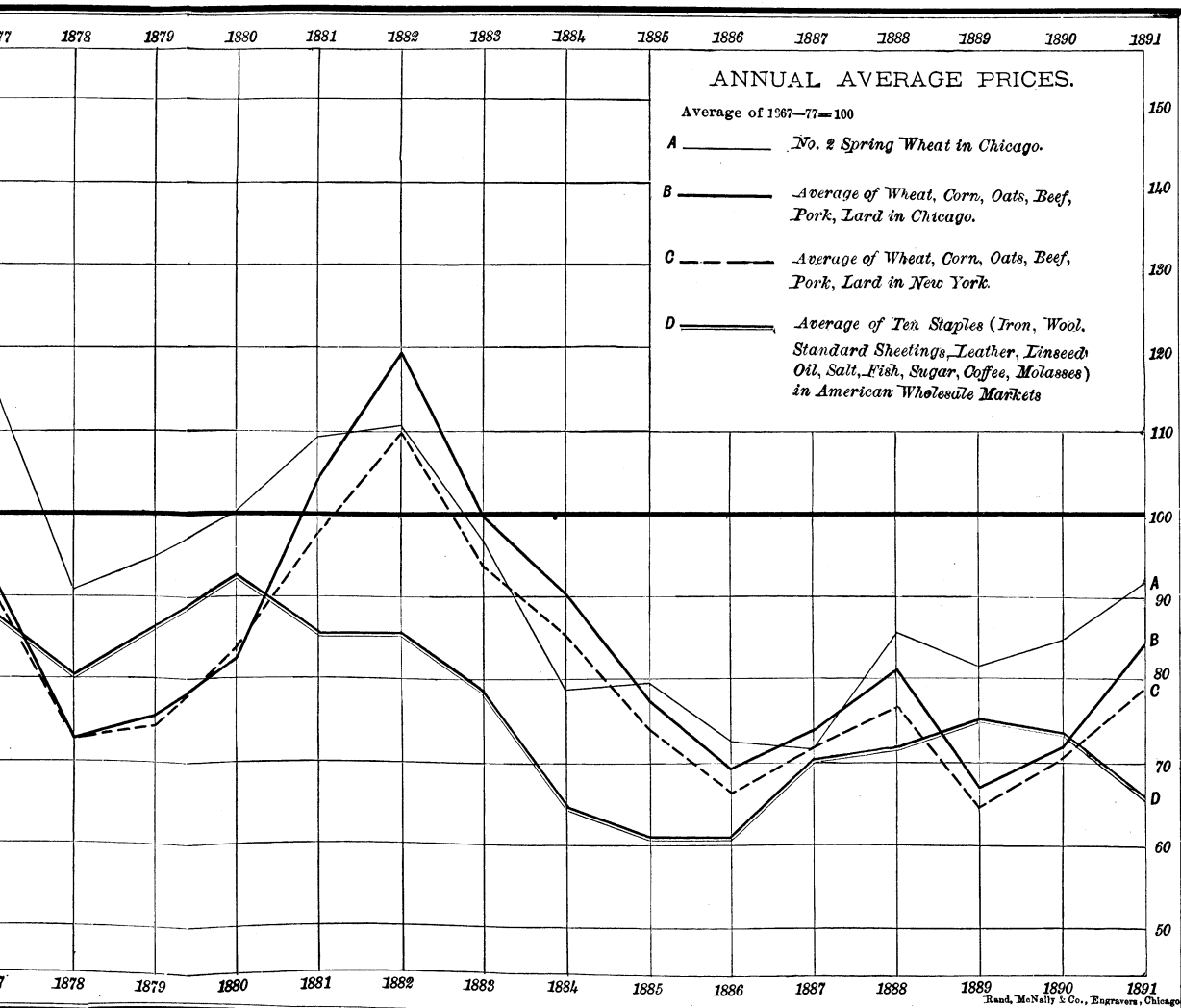


CHART III.



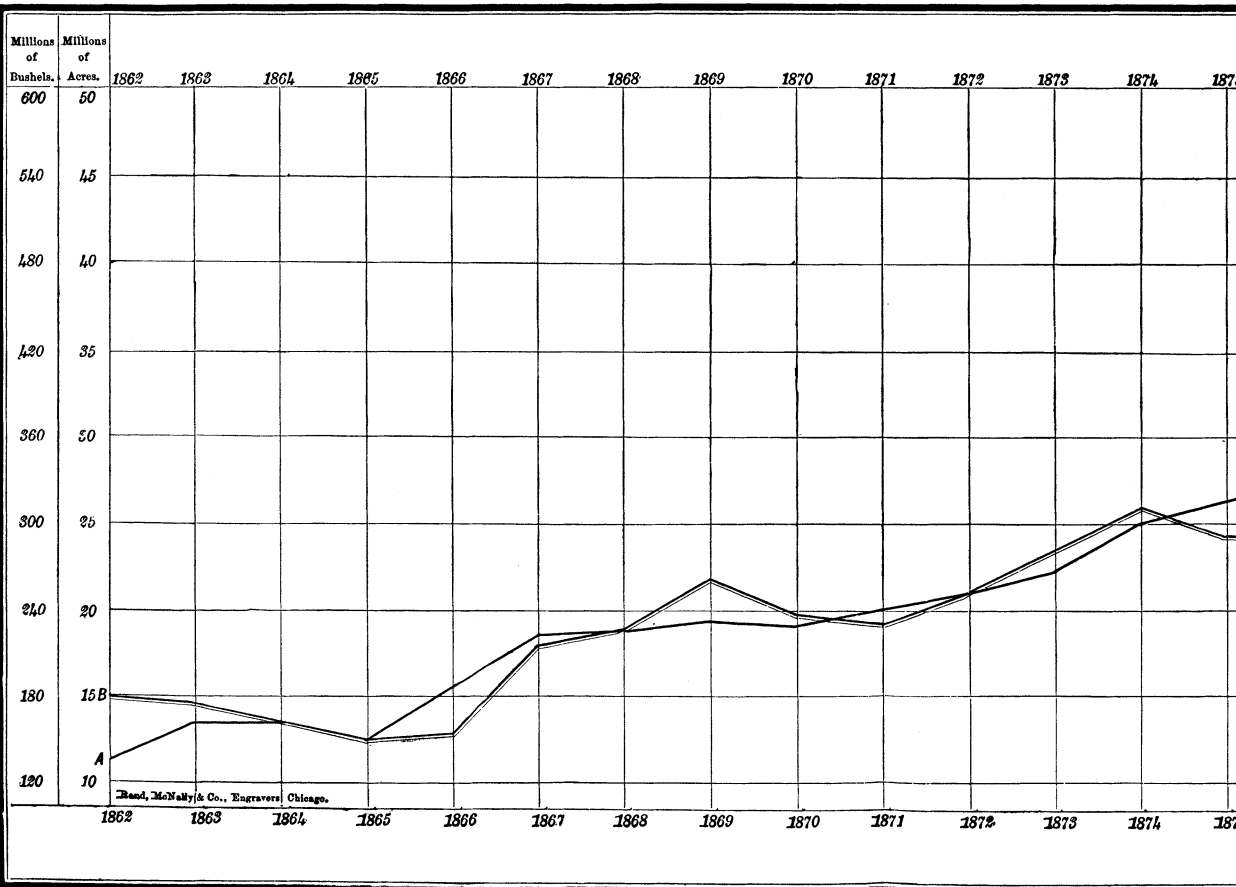
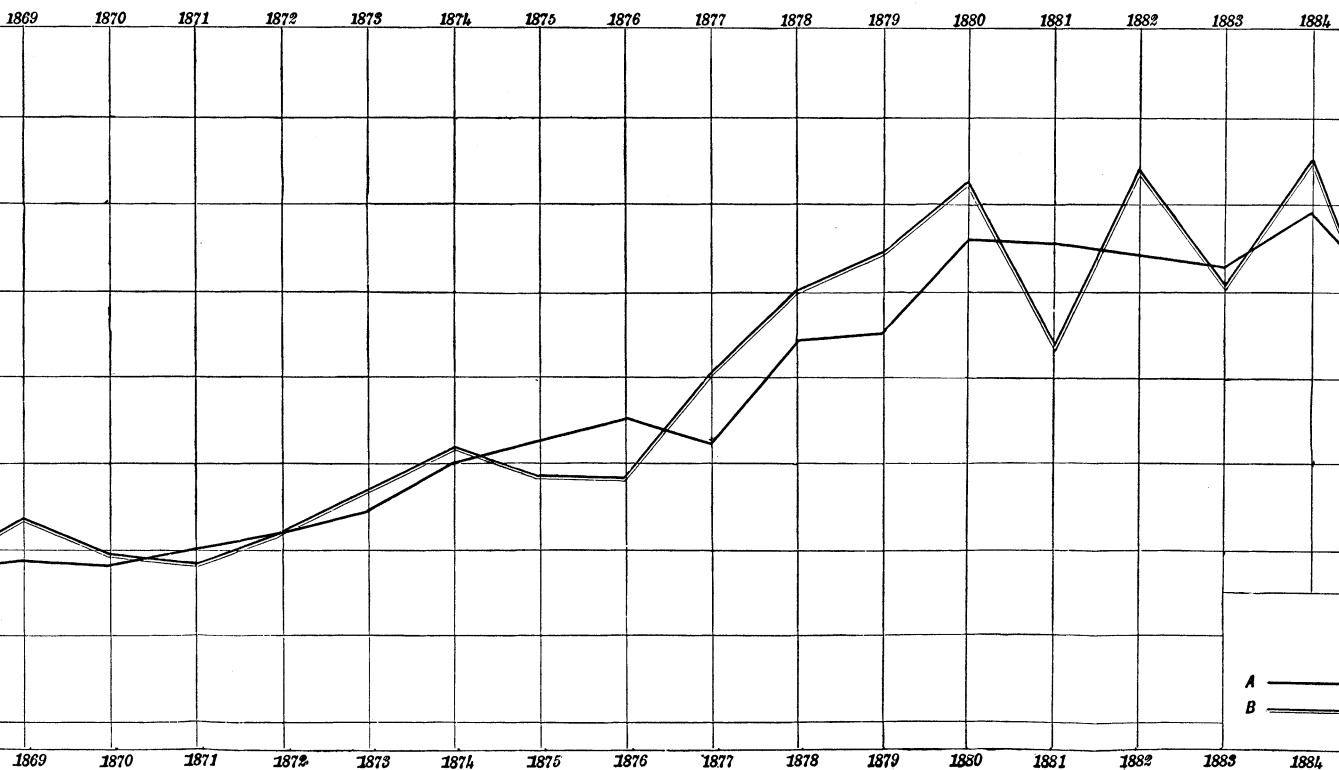
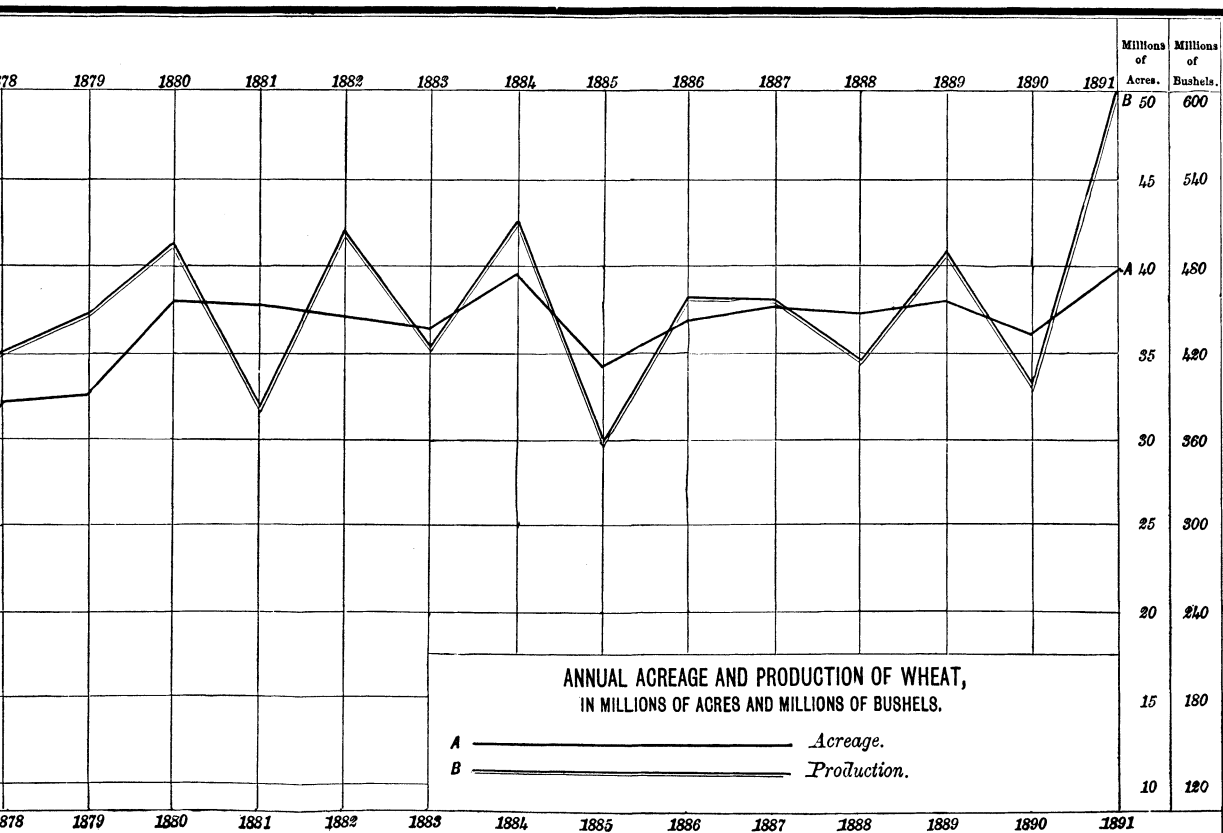


CHART IV.





Millions
of
Bushels.

Millions
of
Acres.

1867 1868 1869 1870 1871 1872 1873 1874 1875 1876 1877 1878 1879 1880 1881 1882 1883

ANNUAL ACREAGE AND PRODUCTION OF WHEAT, BY GROUPS OF STATES, IN MILLIONS OF ACRES AND MILLIONS OF BUSHEL.

I Maryland, Pennsylvania, New York.

A ————— Acreage.

B ————— Production.

II Illinois, Indiana, Kentucky, Michigan, Ohio,
Tennessee, Wisconsin.

C ————— Acreage.

D ————— Production.

III Dakota (after 1882), Iowa, Kansas, Minnesota,
Missouri, Nebraska, Texas.

E ————— Acreage.

F ————— Production.

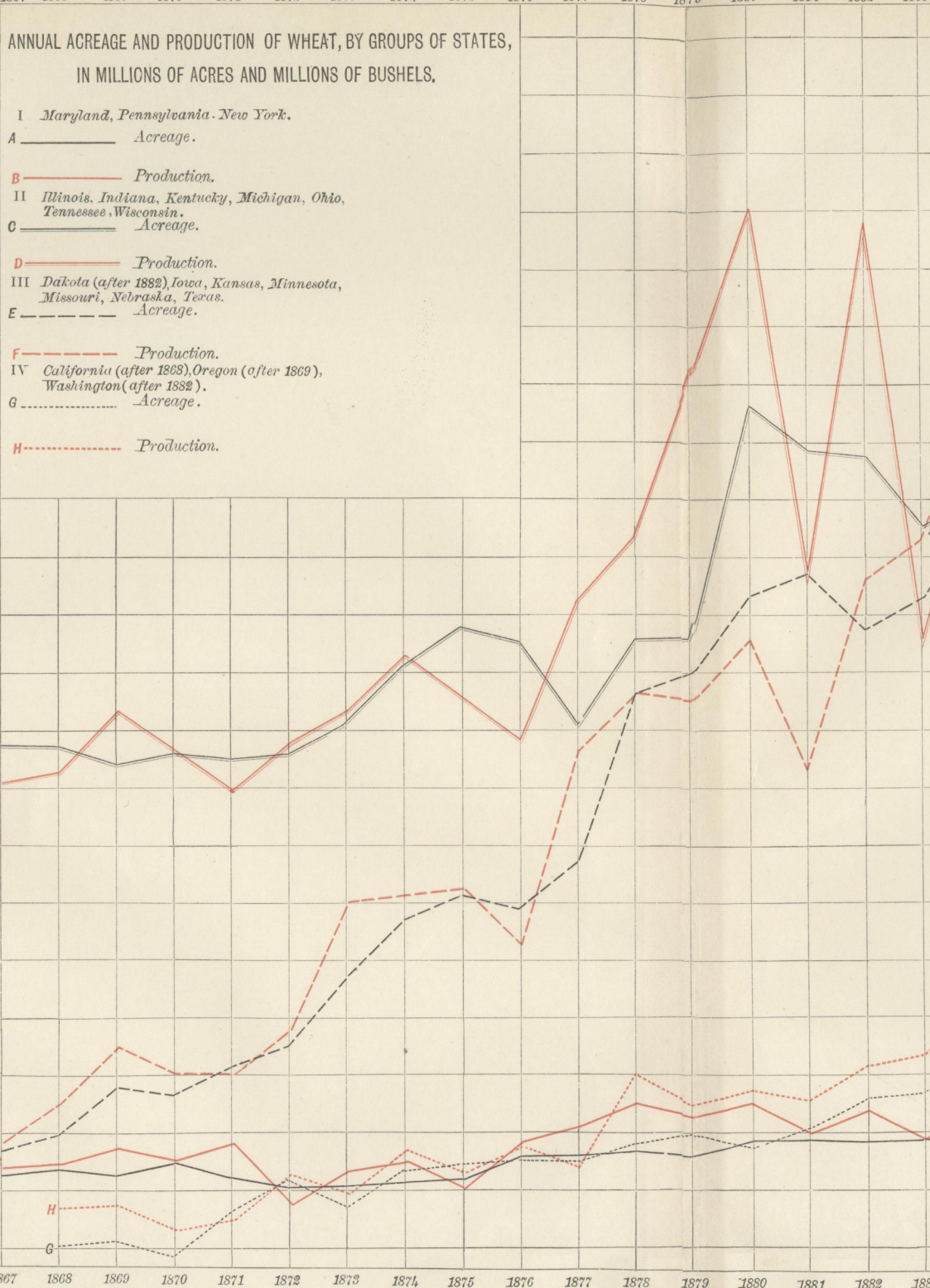
IV California (after 1868), Oregon (after 1869),
Washington (after 1882).

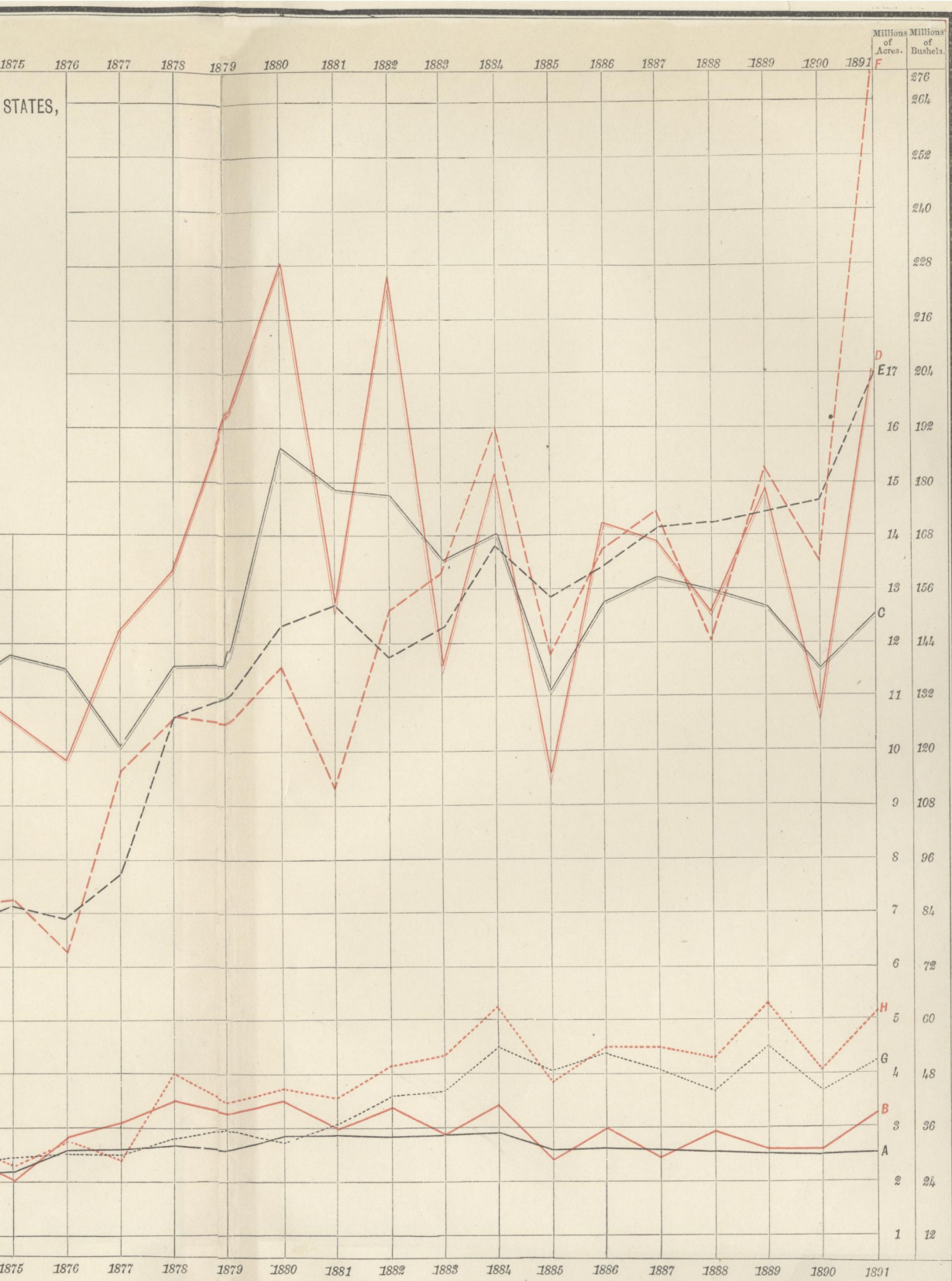
G ————— Acreage.

H ————— Production.

276
264
252
240
228
216
204
192
180
168
156
144
132
120
108
96
84
72
60
48
36
24
12

1867 1868 1869 1870 1871 1872 1873 1874 1875 1876 1877 1878 1879 1880 1881 1882 1883





charges were high, as measured by standards since grown familiar to the grain trade. Lake-and-canal freights to New York were rather high even as compared with what they had been immediately before the war.¹ See Chart I. B. The "center line of production" of wheat in 1867 was very close to the eastern boundary of Illinois. (For the movement of the acreage sown to wheat at this time see Charts IV. and V.)

NOTE TO CHART I.

A. The lines for wheat in Chicago and in New York are, as near as may be, for the same grade down to 1889, and therefore afford a fairly accurate comparison of the course of prices in those two markets. For 1890 and 1891 the New York price is that of No. 2 Red Winter, which at those dates was very nearly coincident with No. 2 Spring—perhaps a trifle over the latter.

The line traced by American wheat in the London market is, therefore, not available for a precise comparison with the American price. In comparing the lines it should be borne in mind that No. 2 Red Winter wheat ruled from one or two cents to ten or twelve cents above No. 2 Spring during the earlier years covered by the chart—down to about 1881-2; and that during the later years the difference has been slight and shifting—sometimes in favor of one, sometimes of the other. On this account, the rate of approach of the American price to the English price during the period appears greater on the chart than it has been in fact.

The line for British wheat represents the actual average of the selling price of wheat in the towns of the United Kingdom from which returns are collected. It therefore indicates price without regard to grade, and any comparison of this line with the other lines of the chart can be of value only as suggesting the relative course of prices, rather than as furnishing anything in the nature of a demonstration. Wherever—during the earlier years—the line for British wheat falls considerably below that for No. 2 Red Winter in London, it is to be taken, generally, as indicating that the British crop of

¹ *The Financial and Commercial Chronicle* of May 8, 1869, gives details of the cost of transporting a bushel of wheat from the Mississippi river to New York as follows:—

Freight by rail to Chicago (200 miles)	-	-	-	-	-	-	-	20	cents.
Inspection (in and out)	-	-	-	-	-	-	-	$\frac{1}{4}$	"
Storage	-	-	-	-	-	-	-	$2\frac{1}{2}$	"
Commissions	-	-	-	-	-	-	-	$1\frac{1}{2}$	"
Freight, Chicago to Buffalo, by Lake	-	-	-	-	-	-	-	$6\frac{1}{2}$	"
Insurance	-	-	-	-	-	-	-	$1\frac{1}{4}$	"
Elevator at Buffalo	-	-	-	-	-	-	-	2	"
Handling	-	-	-	-	-	-	-	$\frac{1}{4}$	"
Commissions at Buffalo	-	-	-	-	-	-	-	$1\frac{1}{2}$	"
Freight, Canal to New York	-	-	-	-	-	-	-	$13\frac{1}{2}$	"
Expenses in New York	-	-	-	-	-	-	-	3	"
Total expenses	-	-	-	-	-	-	-	$52\frac{1}{4}$	cents.

that year was of under average quality. Grade for grade, British wheat at that time was preferred to American. During the later years—from about 1880—the great and permanent decline of British wheat relatively to No. 2 Red Winter is due to the fact that with the adoption of the most modern methods of milling the harder and stronger American wheats have come to be preferred to British wheat that may be otherwise of unexceptionable character.

B. The lines traced on the chart by freight rates from Chicago to New York are computed in currency, for the years of depreciated paper money. That for lake- and- canal represents the charges only for the months during which the canals were open each year, and is consequently not to be taken as a true yearly average. That for all-rail represents the yearly average, and after about 1876-77 it may be taken as an approximately true indication of freights. It is, however, to be noted that the figures it indicates are probably always, but not uniformly, too high; partly because little, or sometimes no grain was shipped at the highest rates quoted, and partly because there is no means of knowing how far the figures published were cut under. The making of special rates, sometimes very considerably below published tariffs, was always practiced, sometimes to a very great extent. These lines are, therefore, also not available for any precise comparison.

In converting English quotations into American terms, the penny has been rated at two cents. Consequently these quotations, as traced on the chart, range some $1\frac{1}{2}$ per cent. lower than a more exact computation would make them.

The figures for inland freights may be found in the Statistical Abstract of the United States, or in the reports of the New York Produce Exchange, or of the Chicago Board of Trade. Those for ocean freights in either of the two latter publications or in the reports of the Secretary of Agriculture.

It appears on closer study of the price movement of wheat and the development of the forces which determined the movement during the years from 1867 to the present, that the course of development falls into three more or less clearly defined periods—1867-73, 1873-1882, and 1882-91. The last four years, 1887-91, may perhaps as properly be counted as the initial stage of a new phase of the development, but the nearness of this last change to the present, as well as the fact that the characteristic features of the change are not yet sufficiently defined for satisfactory discussion as a separate whole, will prevent these years from being taken up as a distinct period.

I. 1867-1873.

From 1867 to 1870 the average of prices of staple farm products, as a whole, kept very much on a level. This was not due to a uniformity of movement of the whole, nor to a steady-

ness on part of the different items. Wheat declined during the latter half of 1868, and the decline continued in 1869. It remained low through 1870, and rose again in 1871. The course of prices in none of the other staples ran parallel with that of wheat, and the lines traced by the members of the group during these years do not show the presence of any single controlling force. The line for wheat runs boldly across that for the group as a whole in 1870-72, wheat prices rising very distinctly, while prices for all the rest of the group fall, strongly and unitedly (see Chart II.). In 1873 the line for wheat shares the general downward trend of the group as a whole; after which all parallelism between the course of wheat prices and prices of other staples apparently ceases, until 1877. In general, during the twelve years from 1867 to 1878, wheat prices run a course apparently independent of the prices of other staple farm products. Closer study of the causes which controlled wheat prices in those years will show that there were special forces acting on wheat sufficient to account for this apparent anomaly.

Neither can it be said that wheat prices follow the general course of prices for other than agricultural products at the time. Wheat prices, and other agricultural prices as well, partook only in a superficial way of the general speculative advance of the years 1871 to 1873. Nor do agricultural prices enter on the decline that followed the break of the speculative movement, until it had been in progress for over a year in general prices. It is only when a considerable series of years is taken as a whole that the parallelism between the course of agricultural prices and of prices generally at this time becomes apparent. It is true of wheat and of other agricultural staples, as it is of commodities generally, that prices ruled higher during the closing years of the sixties than they did ten years later.

As to the detailed movements by which this general course of prices was worked out. The year 1869 was one of depression in farming; the corn crop was short and of poor quality; the season had been cold and wet; wheat gave a large yield, and the winter wheat was of very fair quality, but much of the spring wheat

was low grade. The crops of 1868 had depressed prices for the early part of the year, and the new crops did nothing towards a recovery. The British wheat crop was about an average, and altogether there was no large demand for American wheat abroad. Taken as a whole, 1870 was rather a featureless year for wheat. There was a medium crop, of moderate grade. Corn was a large crop and of high grade. The crop of the United Kingdom was slightly over average bulk, and distinctly over average quality. The outbreak of the French-German war brought prices to a higher level for short time; and later, when the fall of Paris and the close of the war was looked for, prices advanced again. Late in 1870 and during the early months of 1871 wheat advanced on the strength of an expected increased demand on the return of peace, and also on the strength of a considerable diminution of the stocks below what had been on hand a year or two earlier. Supplies had been unusually large in 1868 and 1869, and it may be set down that prices of wheat had been abnormally depressed for a year or two on that account. So that, independently of known facts as to the change in the size of the stocks on hand, the change in acreage during the years in question reflect the fact that prices were ruling "too low" in 1869 and 1870. In the normal course of things at the time, apart from fortuitous circumstances, the wheat area ought to have increased with some rapidity.

From 1867 to 1869 there is an increase in acreage of some magnitude, but in 1870 there is an absolute decrease, followed by an increase in 1871 of rather less than the average annual increase for the years 1867-73. But what is more significant still, than the figures for the aggregate wheat area, is the manner in which the figures for particular sections of the country vary. In the older sections (groups I. and II. of Chart V.) the acreage in wheat declined in 1869, apparently in consequence of the decline in price that had set in during the latter half of 1868, and of an advance in the prices of hog products, and perhaps in part because of a low yield. But 1869 was a year of exceptionally good yield, especially of

winter wheat, which is grown in those older sections, and wheat-growing proved profitable for the year, in spite of low prices; and the following year the acreage sowed to wheat was about as large as it had been the previous year. In the new wheat country west of the Mississippi, and in California; where the cultivated area was increasing fast; where the farmers had virtually undertaken, on the strength of the prices of previous years, to increase their crops the coming year; and where wheat was practically the only available crop; there the change from an increase of wheat acreage to a standstill or a decrease was not easily carried out, and did not take place with the same promptness. The farming of that country was based on the increase of the wheat acreage as its vital principle, and it consequently took time to effect a change. A decrease in wheat acreage in those states would mean pretty much the same as a decrease in the total number of acres of cultivated land. The acreage in those sections, therefore, went on increasing strongly, especially in the trans-Mississippi states, in 1869; but, although the yield in 1869 had been good, there was a decrease in wheat area of some 500,000 acres in those sections for 1870. The decline in price seems to have acted as a distinct check to wheat-growing, from which the wheat states of the Northwest had to take time to recover; in fact, they had to wait for a fresh wave of immigration. The variation in acreage corresponding to the variation in price suggests that the price at which wheat could be profitably grown in 1868-73 was such a price as would be indicated in the Chicago market at that time by something between \$1.25 and \$0.85 gold, or \$1.75 and \$1 currency. Probably it is safe to say that an average price much below \$1 gold for No. 2 Spring in the Chicago market, would not have been sufficient to induce any increase of the acreage cultivated in wheat during those years.

The years 1871-72 were years of slightly under average yield in America, and somewhat more below average in Great Britain, with a considerable demand for wheat on the Continent. The corn crop of both years was also a little short of the previous year, on account of a reduced acreage. The crops of 1870, 1871

and 1872 sold at good prices. Probably the prices obtained by the farmers at the local markets in the newer wheat regions of the West were very nearly as good as what they had realized for the crops of 1866 and 1867. The proximate cause which determined the price of each successive crop of wheat down to 1873, was the same as since that time. It is the crop and the crop prospect of wheat. Second and subsidiary to it is the character of the harvest of other grains.¹ The crop, the available supply, is the immediate controlling factor in making the price of wheat. That has of course held true since 1873 as it did before. But the general causes that have operated to determine the course of the price of wheat, and, in some degree to determine the magnitude of the available supply, have not been altogether the same since that year as they were for the years immediately preceding.

Taken as a whole, these six years (1868-73) were a period of decline in wheat prices, both absolutely and relatively to prices of staples generally. (See Chart III.) It was a period, for the most part, of a sluggish condition of trade, though general prices as computed in gold were not on the whole declining after 1868. With that year began the movement in railroad building that afterward became the characteristic feature and gave the tone to the business situation down to 1873. The speculation and inflation of values which became perceptible in 1870 and reached a climax in 1873, did not affect farming in any appreciable degree. Its influence on agricultural prices is not exactly imperceptible, but to all appearances it had a very inconsiderable effect in the way of advancing prices of farm products. There is, in the nature of things, no reason why American agriculture, and especially wheat farming, should have shared greatly in the boom of those years. The boom did very little to increase the demand for farm products, and it did nothing at all to decrease their cost of production at the time. On the

¹ Mr. G. SHAW-LEFEVRE has shown (*Journal of the Statistical Society*, December, 1879) that from 1852 to 1872 the price of wheat had very generally varied inversely as the British crop. Since that time a like statement will hold true if, instead of the British crop alone, the entire available wheat harvest of the world is taken into account.

contrary it distinctly acted to increase their cost. Prices of what the farmers had to buy were advancing, through the action of causes that had but a remote and indirect influence on the prices of what the farmers had to sell. Improvements were being introduced in the production and transportation of grain and other products, but not at any greater rate than the use of like improved processes and methods was increasing in other branches of industry.

The main facts bearing on wheat prices in the years immediately previous to the crisis of 1873 are these: American wheat crops were fair or moderate; corn crops were above average after 1869; freights were high, and, on the whole tending to advance; commissions and charges for storage, handling, etc., were heavy, but they were in process of improvement; British crops, and European crops generally, were, on the whole, fair or moderately short, so that there was an active and growing, but for the most part not a very urgent export demand; there was a speculative movement of considerable intensity, especially in 1871-2, in the prices of other than agricultural products; and this last fact, on the whole, went to offset the favorable factors in a situation that would otherwise have been moderately advantageous to the wheat farmer. The result was that prices in the primary markets ranged too low to greatly stimulate wheat growing or to satisfy the farmers of the West, and there was a good deal of complaint. Compared with the industries that felt the direct impetus of the speculative movement, the profits of wheat farming, in the general run, were distinctly moderate.

II. 1873-1882.

With 1873 the movement of wheat prices and wheat production entered on a new phase. The commercial crash of that year was of course not felt at the time to be an auspicious change for wheat farming, but the farming community of the wheat-growing country did not long feel the effects of the shock, and they never realized that 1873-78 was a season of hard times.

These years are the most remarkable period that has been seen in American wheat growing.

After 1872, or more precisely from the time when the prospect for the harvest of 1873 was falling into definite shape in the summer of that year, the price began to decline.¹ It receded steadily, with the ordinary fluctuations from month to month, until 1875, when it averaged \$1.023, currency, or \$0.889, gold, for the year in Chicago. Then it began to recover in the same manner, and, with the single break of the anomalous record of 1877, the yearly averages show a steady advance, one above another, until 1882. The turning point was early in August, 1882.

As to the movement in acreage. In 1872 the area sown to wheat was 20,858,359 acres; in 1880 it was 37,986,717, an average annual increase of 2,141,044 acres, or something over 10 per cent. a year for the whole eight years. The average annual increase in acreage during the years 1867-72, the period of greatest previous increase, was 905,644 acres, or something over five per cent. a year for the whole six years.

From 1873 to 1880 there was but one crop, that of 1876, that was distinctly poor, and one other that was below the normal average yield, taking the aggregate wheat crop of the country as a whole. The crop of 1881, again, was short, by an average of about two bushels per acre; but that of 1882 was nearly as much over the average.

The crop of 1873 was a very good one in this country, and distinctly poor in England and Western Europe. The American crop of 1874 was over average in bulk, though much of the spring wheat was not very satisfactory in quality, and was also lower in yield than the winter wheat; the British crop was very good, both in bulk and grade, and that of Western Europe generally was very satisfactory. It was distinctly a year of abundance. The American corn crop of 1873 had been under average, and that of 1874 was poor.²

¹ The beginning of the fall in the price of wheat preceded the failure of Jay Cooke & Co. by some three months, though there was a heavy drop in wheat also immediately after the crash which the failure of that firm initiated.

² The Chicago Board of Trade Report contradicts the statement of the Commis-

According to the government report the wheat crop of 1875 was a bushel short of the normal average yield per acre for the whole country, with an unusual proportion of the lower grades both in Winter and Spring Wheat.¹ The British crop was very deficient, and that of the Continent was also under average. It is to be noted as at least very probable that unusually large supplies were carried over this year from the previous harvest. Corn yielded much over average in 1875, but there seems to have been an unusually large proportion of soft, poor corn. A larger amount was exported of this than of any previous corn crop.

In 1876 wheat was a poor crop—worse than any since 1866. The spring wheat crop was extremely disappointing in point of yield, but on the whole of fair quality. The British crop was worse than that of the previous year—26 per cent. under average—and the like is true for the Continent. This year was the last of a series of four, during which the average yield per acre of wheat in America, as estimated by the Department of Agriculture, decreased regularly by about one-half bushel a year; while the last two of the four had also been years of very deficient crops abroad. The average (gold) price for the twelve months following the harvest of 1876 was probably higher in the local markets of the West than for any previous period of twelve months. This was due partly to the distinctly short crops, and partly to the Russo-Turkish war, which put a stop to exports from Eastern Russia in

sioner of Agriculture as to the corn crop of 1874, but the former seems to have allowed too much weight to the condition of the crop in the region tributary to the Chicago market, where the crop was good and fairly high grade, and so placed its estimates too high.

¹ The Annual Report of the Chicago Board of Trade criticises the Government estimate as too high for the Northwest. "The crop of Minnesota and Iowa harvested in 1875 was estimated [in the Report of the Commissioner of Agriculture] at 57,000,000 bushels. This was, undoubtedly, considerably in excess of the actual yield of merchantable wheat, as no exhibit of deliveries appears in any record that would justify a conclusion of its correctness. That crop met the misfortune of wet weather in its harvesting and subsequent care, and probably a large amount was lost that under more favorable influences would have found its way to market." *Annual Report*, 1876. Secretary's Review.

the spring of 1877. The prices of other grain, of which there was no shortage, seem to have been perceptibly influenced by the scarcity of wheat.

Then follow four extraordinary wheat harvests in America, coupled with corn crops every one of which was considerably over average, and one of them very abundant, and with nearly every other crop ranging over average the greater part of the four years. It is to be added that, except in wheat, crops had been unusually good for a couple of years before 1877. A drawback to this favorable showing was the poor crops in the spring wheat region of the Northwest in 1878 and 1879, amounting in some localities, in the former year, to a complete failure. The cause of this was very hot weather shortly before harvest. In grade, the crop of 1879 compared favorably with that of 1878, especially the spring wheat; which, however, was of low grade in both years. 1880 was a better year for the wheat growers of the Northwest, though the average yield for the whole country did not equal that of the previous year.¹

In the United Kingdom the crop was very deficient in 1877, but better on the Continent. 1878 was a fair average year, if not over average, in England, but under average on the Continent taken as a whole. For 1879 the *Economist* says: "The wheat crop, and the harvest generally of 1879, is not only the worst in fourteen years [since the failure of 1867], but the worst which has occurred, probably, for thirty years." It was a bad year for nearly all of Europe. Though not up to the ordinary average, 1880 was a much better year in Europe, and the two years following were each an improvement on the next before, until the harvest of 1882, which was reported to have been "of a fair average kind" for wheat. The grain harvest

¹Altogether, the boast of the Commissioner in his report for that year seems well founded, that the four years of President Hayes's administration had been more productive and more prosperous years for American agriculture than "any other continuous four years in our history. They have been years of exceptionally good crops of all the different staples grown either for home consumption or export." These four years were, in the main, much more favorable for Winter wheat than for Spring.

as a whole for that year was "under the average, or slightly under the average."

As for the American crops of these two years—1881–2—the run of luck of the wheat farmers came to an abrupt reversal in 1881.¹ Winter wheat, especially in the great winter wheat states of the Ohio valley and the Lake region, was very seriously deficient, both in bulk and grade. The spring wheat crop of the Northwest was also deficient, but not to as great an extent. In 1882, however, there was another very good harvest, — 35 per cent. above that of 1881, and nearly equal to that of 1879. But only part of the winter wheat crop of that year was marketed at the high prices that had ruled in 1881 and early in 1882. The price broke suddenly at the time the spring wheat crop was being harvested, and never recovered. (See Chart I.)

The immediate relation between crops and price during these years, 1873–82, is a relation not simply between the American crop and the American price; it is a relation between the aggregate crop of the modern industrial countries and the price in the world's market. A short crop in America, as in 1875, acts to raise the price; the effect is perceptible in the line it traces. But the depressing effect of an extremely abundant American crop, as that of 1879, when coupled with a deficiency abroad, is not distinctly perceptible in the course of prices for the next twelve months. When, however, a deficiency in America coincides with a deficiency abroad, as in 1876, the effect on the course of prices for the succeeding year is very striking.

During the years just reviewed, and since that time, the American price of wheat has not been governed, habitually or mainly, by the volume of the American crop, as was the case, in the main, down to the years immediately preceding the civil war; nor by the European, or British crop, as was pretty much the case during the sixties (more accurately the fifteen or twenty

¹ "In no season since the inauguration of crop reporting has there been so general disaster, involving corn, wheat, barley, buckwheat and rye, oats alone being exempted from loss." Report of the Statistician in the *Report of the Commissioner of Agriculture*, 1881.

years, ending about 1872-3); but by the aggregate volume of the world's crop, in which America's contribution has counted sufficiently to distinctly and greatly influence the course of prices in the world's market. Indeed, the American wheat crop counted for more as a factor in fixing the yearly price of grain during these years, from 1873 to 1881, than any other equally distinct single factor, and more than it has counted for, relatively, before or since. The American crop during those years occupied a position of striking dramatic value. It nearly attained the point of a virtual monopoly control of prices. The forces which placed it in this commanding position were the fortuitous circumstances of the seasons, but the seasons were of so uniform a character as to make the position one of some permanence.

There need be no doubt but that, taken as a whole, wheat growing during these years was distinctly profitable. How profitable is a question that does not admit of an intelligible answer, but there are indications that it was, perhaps, the most paying branch of American farming during a time when American farming paid unusually well. During the five or six years already spoken of above (pp. 25-47), 1867 to 1872-3, wheat farming must be held to have been moderately profitable, taking the period as a whole; though as much can hardly be said for the latter half of those half-dozen years. Neither can it be said that wheat farming during that period was on the whole a more profitable occupation than agriculture generally; still less can it be said that the inducements it offered were great as compared with the average of the country's industries. This is especially true of the years 1869-72. For the succeeding period of ten years, however, it may safely be asserted that both statements are true. Wheat farming compared favorably with other farming, and perhaps still more favorably with the average of other industries.

Chart III. shows the course of prices of five representative staple farm products in comparison with the price of wheat. The lines of the chart show that the price of wheat ranged relatively higher during these years than the average of the

prices of wheat, corn, oats, beef, pork and lard; and a further detailed comparison with prices of other staple farm products, some of which are given in the tables of the Appendix, goes to show that the like is true to at least as great an extent when wheat is compared with the whole range of farm products. The same chart includes, also, the line traced by the course of prices of ten staple commodities, all of which are among those that go to make up the wheat farmer's expenditure, and most of them are products of industries with which wheat farming may fairly be compared. The line traced by these runs, relatively, still lower even than that for staple farm products during these years. A more detailed comparison with prices ruling in other goods during the same years does not by any means tend to vitiate the inference which the lines of the chart offer

If the conditions of production, therefore, had remained the same throughout the period as they were during the years immediately preceding, both in wheat and other farming and in other industries, it would follow that wheat farming had gained in lucrativeness relatively to other occupations simply in consequence of an enhanced price for its product. But the conditions of production did not remain unchanged, either in wheat farming or any other industry. It was a period of very material advance in methods and appliances, and the advance was assuredly no less in those particulars that had to do, directly and indirectly, with wheat farming than in any other.

The changes for the better in the implements actually in use by wheat farmers during the period was very great, both in cheapness and in efficiency. The case of the reaper may be taken as an example of the improvements by which wheat farming profited. During the early seventies the self-rake was in use, and had reached practically the same degree of efficiency as it has to-day. About 1872-75 the harvester came into pretty general use. The harvester was an advance over the self-rake such as anyone who has not seen both machines in use on the wheat fields of the West will scarcely appreciate. During the period from 1874 to 1878 the wire-binder was introduced, and proved itself in many

respects superior to any harvesting machinery before in use. A great number of machines of different makes were sold, but the wire-binder never finally and decisively replaced the harvester. Down to the first extended and practically successful introduction of the twine-binder, 1879–80, no wire-binding machines had been offered that were entirely acceptable. The presence of the wire itself was a drawback; the machines were unsatisfactory and tantalizing, on the score of heavy draft or of inefficient work. From the time of the first successful introduction of the twine-binder, 1879, the wire-binder, as well as the harvester, was distinctly out of date.

The price at which each of these machines was successively introduced was always considerably higher than the price of the machine which it replaced. The prices were not sufficiently uniform to admit of giving satisfactory figures, but, in a general way, it may be said that, at its first introduction in the wheat lands west of the Mississippi, the harvester was perhaps of 50 per cent. higher cost to the farmer than the self-rake. In a few years the price was very considerably reduced. Likewise, when the twine-binder began to replace the harvester, it was at a price something like a hundred per cent. above that of the latter. This price also gradually declined, until it is possible to get a twine-binder to-day, more efficient than the machines that were sold at \$320 in 1880, from \$100 to \$120.¹ The best twine binder now costs less than the common run of self-rake reapers did in 1872–3. A twine-binder cost more—perhaps nearly twice as much—in 1880 than a self-rake reaper in 1872. But that the twine-binder was distinctly better worth its price in 1880 than a self-rake reaper, which could then be bought for about a third of the price of the former, is sufficiently established by the fact that the binder replaced the reaper in spite of the disadvantage in price.

¹ Self-rake reapers of the standard makes were sold for about \$200, currency, about 1870. From that time the price declined to \$150 or \$160 in 1875–6. Harvesters when first successfully and extensively introduced, about 1872–3, were sold for \$200 and over. By 1878–9 the price had declined by nearly one-half.

As to the work of which these machines were capable. In 1870-73, in the wheat country of the Western states, the ordinary self-rake reaper was drawn by two horses, sometimes three, with one man, or sometimes a boy or a woman, for driver. The machine would cut ten or twelve, sometimes fifteen acres of the common run of spring wheat, such as would yield in an ordinary year 15 or 20 bushels per acre, in a day of about twelve hours; the average day's work, on the wheat fields of Minnesota, say, was probably not far from eleven acres. Four, or sometimes five, men were required to bind the grain cut by one machine, and one man, not entirely without help from the binders, could "shock" the day's cut of grain. The harvester required the same number of horses, could cut the same or a little smaller amount of grain per day, and required two men to do the binding. The driver of the harvester was usually a boy, or some person of less value for heavy work than an able-bodied man. The harvester saved a distinctly larger proportion of the grain than the self-rake. The twine-binder required at the time of its introduction—and not much improvement has been made in this respect—three horses, though four could and can be used to advantage with most machines of this class, wherever the fields are large and the ground not unusually firm. A binder may—sometimes with advantage—be operated with two animals; but that is the exception, not the rule. Such a machine, a six-foot-cut, would, with a full equipment of horses, cut and bind twelve acres and upwards in a day of twelve hours in ordinary average Minnesota grain. As high as twenty acres a day, on an average through the harvest season, have been cut and bound with one machine, and even as high as twenty-five acres of ordinary grain has been covered in a single day; but in these cases the binder has worked long hours, and almost invariably these very high records have been made by the use of more than three horses, or with a frequent change of teams. Fifteen acres of ordinary spring wheat on fairly level ground may perhaps be a little over the average of the day's work accomplished by the twine-binder the first few years after its introduction, and a little

under the average of what the same class of machines will accomplish now. The machines are made to cut a wider swath, on an average, now than ten or twelve years ago. The self-binder dispenses with hand labor in binding the grain. The driver is usually, and profitably, a grown person, if not in physical development, at least in intelligence. One unusually efficient man will shock the grain cut and bound by a single machine. Usually it takes more than one man.

Such are the main features in the development in reaping machinery since 1870. The greatest advance in efficiency was made during the period 1872-82. In no other particular that has to do directly with wheat production has the advance been as great as in reaping machinery, but the development elsewhere has been much the same in kind if not in degree. Threshing by steam-power came into general use in the wheat country during the same years. An item that marks a very distinct advance, so far as concerns the spring wheat country of the Northwest, is the introduction of a successful straw-burning engine, 1875-80. The barbed-wire fence is an invention of the first importance for American farming; and of greater value, perhaps, to the farmers of the great wheat states than to any others. The wire fence, too, developed gradually. It practically reached its highest efficiency by the end of the period under discussion; though prices of wire have fallen lower since than they had been down to that time, and so have increased the availability of the fence.*

There are very many improvements in means and methods of work in other industries that affected the cost of wheat production during the years under discussion, and since that time. Their manner of operation has been by lowering the cost of what the wheat farmer has to buy, or by increasing his share of the final price paid by the consumer for his product. The line of Chart III, the resultant of ten staple commodities, suggests how far the wheat farmer was benefited by the first-mentioned effect

* The wire fence is practically a portable fence of very high efficiency. It is cheap, effective, durable, light, erected and removed with very little labor, occupies a minimum of space, and does not accumulate snow or weeds.

of this class of causes. The second effect has been produced mainly by mechanical improvements in the handling and transportation of grain and other farm products. The details of the process of improvement in the shipment and sale of grain, are very numerous and complex; but for the present purpose they express themselves in a reduction of the expenses that must be borne by the grain during its transit from the farm to the consumer. The causes that underlie these changes in local and transit rates need not engage our attention here.

Among the striking improvements in the direction of cheapening transportation, by which the wheat trade of this period was benefited, were the substitution of steel rails for iron, with the far-reaching consequences following from that innovation; the increase in size of the vessels carrying grain from Chicago to Buffalo (and the use of barges); the lowering and final abolition of tolls on the New York canals, together with an increase of the carrying capacity of the Erie canal.

The decline in freights on grain between Chicago and New York from 1872 to 1876 was very great; after that date it was not pronounced. There was a pretty steady decline in annual average ocean freights on grain from 1873 to 1882; but ocean freights had advanced eleven cents from 1867 to 1873, so that the total decline in 1882 as compared with 1867 was only 2.62 cents.

But freights are not the only charges the grain has to bear in its transit from the farm to the out-bound vessel in New York harbor. It has sometimes happened that the local charges—commissions, storage, and the like—at the various points where the grain has to be handled have in the aggregate equalled the cost of carriage alone.¹ Local charges, for storage, handling,

¹ The following statement by the Statistician of the New York Produce Exchange shows what was the character and importance of other than freight charges at the time rail shipments were becoming general and customary: "The lake insurance and transfer and shipping charges, added to the average lake and canal rate of 1876, make the cost about equal with the rail; but the latter, making better dispatch, resulting in a saving of interest on ventures, with less liability to damage by heating, has, at last season's rail rates, an advantage over the water route." (*Annual Report*, N. Y.

commissions, and the like, in Chicago amounted to some two or three cents per bushel, and suffered no very pronounced decline during these years. In New York they ranged from 3-5 cents in 1872-3 to $1\frac{1}{2}$ -2 cents in 1881-2. Charges for handling and commission at Liverpool were still higher, and remained much higher throughout the period.¹ In the charges for handling grain there was a great reduction made during the seventies at practically all the intermediate points through which grain had to pass on its way to the European markets. The beginning of serious competition between the railways and the lake-and-canal route for the carriage of wheat to the seaboard dates from about 1873-4, when all-rail shipments on a considerable scale were first made, under conditions that are not to be regarded as in any way abnormal.

By 1873-4 the carriage of grain by lake-and-rail and by all-rail was becoming a regular and ordinary feature of the trade. One result, and a very important one, of this change, was the adoption of the method of grading and bulking grain in eastern trade centers, after the fashion that was in use in Chicago and the railroad grain centers of the West. Down to 1874 no rules for the grading and handling of bulk grain, or for its sale and delivery ex-store, had been adopted in the New York market. Deliveries by canal-boat and by rail were made by special consignments and in distinct lots. It was the practice to preserve the identity of the lot of grain shipped, and deliver the particular boat or car-load to the consignee, as is the practice now with respect to most other goods than grain. The relatively small size of a car-load, and the consequent liability of any considerable consign-

Produce Exchange, 1875-6, p. 220.) The apparent difference in favor of the lake-and-canal route at this time was more than six cents a bushel (see Chart I. B). The real difference was not quite so great, on account of special rates of varying amount having been made by the railroads during the year.

¹ Grain elevators began to be used in Liverpool only at the end of the seventies, and the reduction which had been effected in local charges previous to 1880 was, therefore, quite inconsiderable. They are stated by Messrs. Read and Pell, in their report to the Agricultural Interests Commission, 1880, to have been at that time about 2s. 1d. per quarter (about 6 cents per bushel).

ments of grain shipped over a long distance to become divided up on the way, and to arrive at its destination in a scattering fashion, made the adoption of grading and bulking grain indispensable. A lot of 15 or 20 car-loads might be delivered in fractions of one, two, or more cars, at odd times during a period of, perhaps, two or three weeks, or in extreme cases even more; the result being uncertainty, complaints, and demurrage. The method of bulking graded grain, together with the consequent development of railroad-owned grain elevators at New York, had an immediate effect, not only in facilitating handling and giving a definite and universal standard of quotations, but also in reducing the expense, and consequently the charges of handling, as well as the number and amounts of commissions and other like local charges. The period 1873-82 includes, also, the adoption and development of the system of railroad elevators at New York. This development of terminal facilities during the period reduced the total charges on grain received by rail in New York and delivered to ocean-going vessels from 4 or 5 cents to about $1\frac{1}{3}$ cents a bushel.

Railroad competition with the Erie canal system threatened to divert the grain trade from that route to other ports, as Philadelphia and Baltimore, and this led to close scrutiny of local charges at Buffalo and New York, with a view to removing any abuses that burdened the traffic. Criticism and recrimination ensued between the trade corporations of the two cities, in which some interesting developments, due to the virtual monopoly long possessed by the Erie Canal route, came to light. It was found that the charges, at Buffalo perhaps more elaborately than elsewhere, had been ingeniously arranged to take as high toll as might be on every bushel that passed through, without regard to ulterior effects on the traffic. The traffic, in fact, was treated as if its volume and value were a fixed quantity, which local charges could have no particular effect either to help or to hinder. This view was pretty near the truth down to the beginning of all-rail shipments on a considerable scale. Under the stress of necessity the middle-men, who drew their income from the

traffic, gradually and reluctantly lowered their charges during the seventies to a point at which their amount would no longer work to the manifest detriment of the traffic. It may be added that since about 1880-82 the question of local charges has been less of a subject for recrimination between trade corporations, and no great reductions have been effected, probably because there has been little room for great or sudden reductions.¹ Reference to the Chart (I. A.) will suggest, in the convergence of the lines for the Chicago and the New York prices during these years, how this reduction in transit charges worked to the benefit of the primary market.

General changes in local charges and freights west of Chicago are more difficult to trace; not only from the difficulty of obtaining the figures, but also, because these local freights have been subject to local and temporary disturbances that vitiate the figures obtainable for any given place and route for purposes of any broad generalization. Figures are obtainable that go to show

¹ The following estimate, given in September, 1879, by Mr. Geo. Randolph, Secretary of the Chicago Board of Trade, may be compared with the estimate given above (note p. 71) of charges on the transit of wheat ten years earlier:—

"Freight to Chicago (350 miles), per bushel	-	-	-	-	-	-	-	-	20 c.
Chicago charges	-	-	-	-	-	-	-	-	2½c.
Insurance on transit	-	-	-	-	-	-	-	-	1¼c.
Freight to Liverpool	-	-	-	-	-	-	-	-	24 c.
Average Liverpool charges, including shortage	-	-	-	-	-	-	-	-	6½c.
Total, per bushel	-	-	-	-	-	-	-	-	54¼c."

The total expense, according to this estimate, of the transit from the local market in Iowa or Minnesota to the warehouse in Liverpool was 1¼ cents more in 1879 than the expense of delivering the grain in New York had been ten years before.

A statement of the expense for a bushel of wheat as far as the vessel in New York harbor, in 1881, to compare with the statement on p. 71, would be as follows:

Freight to Chicago (as before, but for 350 miles instead of 200)	-	-	-	-	-	-	-	-	20 c.
Chicago charges	-	-	-	-	-	-	-	-	2½c.
All-rail freight, Chicago to New York	-	-	-	-	-	-	-	-	14⅞c.
Local charges in New York (storage and weighing)	-	-	-	-	-	-	-	-	½c.
Total, per bushel	-	-	-	-	-	-	-	-	37-⅞c.

In both statements, for 1869 and for 1881, the 20 cents freight to Chicago is set down more or less at a guess. If we throw this item out of both statements, the total cost of transit for a bushel of wheat from its arrival in Chicago to its receipt in New York becomes 32¼ cents in 1876 and 17.⅞ cents in 1881.

that a considerable, but very irregular process of reduction has been going on in rates on grain, but what has been the aggregate average result of the process is very hard to say. On the whole the reduction seems to have been no less pronounced—perhaps rather more pronounced—than the corresponding reduction in charges from Chicago to the seaboard.

The controlling fact which determined the price of wheat in the world's market during these years was a short supply. The seventies, especially after 1876, were a succession of poor harvests in Europe. The American harvests were large, and the annual output was increasing every year, but it did not overtake the demand until 1881, when the series of poor harvests in Europe had come to a close, and the draft on the American supply was no longer as great as it had been. The course of wheat prices was extraordinary, not to say anomalous, through the whole period. Owing to special, largely fortuitous causes, the price was extraordinarily high; and owing to other special causes, partly fortuitous, partly the result of systematic human effort, the high prices ruling were exceptionally remunerative to the American farmer. But while wheat farmers generally, even more than those mainly occupied with other lines of farming, had reason to rejoice in the good fortune of those years of high prices and large yields, the good fortune did not come to all in equal proportion. Winter wheat fared distinctly better in point of crops during the years of rising prices than spring wheat. Every crop from 1877 to 1880 gave an extraordinarily heavy yield in the great winter wheat states (Chart V, group II),^{*} while the four years, 1878–81, were all either moderate or distinctly poor in the spring wheat

^{*} NOTE TO CHARTS IV AND V.

The lines for production are drawn on a scale $\frac{1}{12}$ of that of the lines for acreage; the normal average yield per acre of wheat for the whole country being a fraction over 12 bushels. The rise or fall of the line for production, relatively to that for acreage, indicates approximately the yield per acre for any given year. Wherever the line for production rises greatly above that for acreage, the yield per acre was over the normal average for the whole country, and wherever it falls below, the yield was under the average. The figures from which the lines of these two charts are plotted may be found in the *Statistical Abstract of the United States*.

states. To this is to be added that from 1873 to 1877 grasshoppers visited portions of the states west of the Mississippi, and seriously diminished the aggregate output and the average remunerativeness of the wheat crop in those states.

Still, the acreage under wheat increased greatly, and without intermission, from year to year in the spring wheat group, while in the great winter wheat group the acreage barely held its own from 1875 to 1879. The line traced by beef on Chart II. sets forth the main fact that goes to explain this halt in the increase of the wheat acreage of these states, as well as the signal increase in 1880, and to some extent the decline that set in with 1881. The price of beef advanced strongly from 1875 onward, and the winter wheat states were in a peculiarly favorable position to take advantage of the advance. The halt in the advance of the wheat acreage in 1875 was due in great part to a diversion of the farming of those states from wheat to beef. The remoter cause which underlay the advance in the price of beef was the shipment of fresh meat to Europe. Fresh meat shipments, as a business undertaking, began in October, 1875. The reason for the peculiar movement of the wheat acreage in the winter wheat states during the best years for winter wheat, both as to crops and price, is accordingly not that wheat did not pay well in those states at that time, but that beef paid better. The movement of the acreage in the spring wheat states is testimony to the fact that wheat-growing did pay well even under relatively adverse circumstances during these years.

A change was in progress during these years in the relative prices of winter and spring wheat, a change which completed itself during the eighties. The tradition had been that winter wheat alone could make flour of the best quality, and the softer varieties of winter wheat were preferred to the harder. Spring wheat flour was inferior, according to the old standards and methods, to flour made from winter wheat. Hence winter wheat ruled several cents higher in the market (from 5 or 6 to 20 or 30, or even more) than spring wheat of a corresponding grade. The "new process" of milling that came into vogue in

the seventies treated the hard wheats to better advantage than the old process had done, and the great difference in price was somewhat diminished. When the "roller process" and "gradual reduction" was introduced into the milling system of this country (late in the seventies), and the capabilities of that method came to be developed and appreciated, as to a good extent they were within the first half-dozen years after its introduction, it appeared that a more salable flour could be produced from the hard spring wheats of the Northwest than the best of winter wheat flour, at the same time that a bushel of the spring wheat of the prairies would grind into a larger quantity of flour.¹ The result was that the relative desirability of the two classes of wheat for milling gradually changed.

Down to about 1881-2, by which time the effect of the improved machinery and methods was making itself felt in England, and when the new-process flour had gained some popularity among British consumers, especially bakers, winter wheat, American and British, had customarily ruled somewhat higher than American Spring. The difference varied with the season, but generally the divergence for some years previous to 1880 would amount, on an average for the year, to something like 5 to 10 cents per bushel in favor of winter wheat. About 1880-81 this customary divergence begins to sensibly diminish. By 1884 the difference in favor of No. 2 Red Winter over No. 2 Spring had fallen to about 3 cents per bushel in the Liverpool market. In Chicago the average difference for the year in 1884 was 6.3 cents in favor of No. 2 Red Winter; a difference which afterwards decreased still further, and has practically disappeared. In 1887 winter ranged from 1 cent or less to 4 or 5 cents over spring in Liverpool; in Chicago, 1 or 2 cents over. In 1889 there was a difference the other way. Winter wheat seems to have definitively lost its advantage over spring,

¹ "Minnesota Patents" had attained great popularity by 1876, and the progress of introduction into popular favor of the flours which the gradual reduction process was especially fitted to turn out was therefore well under way before that process came into general use.

the softer varieties of winter especially so. But it is also to be noted that spring wheat has not held the advantage which for a short time it gained over winter wheat. The latest improved methods and appliances seem to treat either, or rather both in due proportion, with the very best results. What advantage there is is in favor of the hard wheats as compared with the soft, and rests on the greater quantity and "strength" of the flour yielded by the hard wheat, rather than on its superior quality in any other respect.

About the middle of the eighties the development of milling processes had successfully made a fresh movement in advance, in making use of a mixture of different varieties of wheat, with the very best results. The mixing of wheats with a view to getting a given result is now an established practice in milling, both in this country and in Europe, and as a consequence a shortage of one kind relatively to the other results in an advance on the part of the kind which is relatively scarce.

III. 1882-1891.

The years since 1882 have been eventful enough, in a way, as regards the course of the price of wheat, but they have been tame in comparison with the ten years that preceded them. The period is remarkable for a relatively close parallelism in the course of prices for all the staple farm products, as well as between the prices of farm products generally and those of other staples. As a whole it is a period from which anomalies are absent to an unusual extent.

About 1881, the causes which had controlled the course of wheat prices during the years immediately preceding gave way to a new set of causes, in many respects of quite a different character. The supply of the western nations was no longer drawn from America and Western Europe entirely, or almost entirely, as had been the case. The seasons in Europe were no longer regularly under the normal average. The American acreage had increased until, with accessions that were beginning to

come in from several new sources, the customary demand was fully met. The change that was at hand in 1881-2 in grain prices was not entirely unforeseen at the time, but the magnitude of the change of which we then witnessed the initial stage was by no means adequately appreciated by those who had most to do with wheat at the time the change set in.

The yearly average for 1882 in Chicago was a little higher than that of the previous year.¹ Such was not the case with respect to the markets of New York and Liverpool. The price in Chicago, for the year as a whole, was "too high," so that wheat was not freely exported. The New York wheat trade saw that this was the case, and said so; but Chicago, especially through the early months of the year, held stiffly to prices that the course of the general wheat market did not warrant.² From 1882 the price sagged off heavily, with the usual fluctuations, till it reached a permanently lower level in 1884—some 30 or 35 cents below the prices of ten years earlier. During this steep decline the Chicago operators were pretty constantly holding back, and holding prices relatively higher in Chicago than elsewhere.³

¹ Wheat opened in Chicago in 1882 at about \$1.26—some 12 cents higher than any yearly average since 1877. It fluctuated unsteadily until early August, when it suddenly fell to \$1.05; the distinctly, doggedly bullish tone of the Chicago market that had prevailed through the first seven or eight months of the year gave way for the time, and wheat ranged below \$1 through the greater part of the remaining four months and closed at about 99 cents.

² After all allowance is made for cut and special rates, and for every other factor that may go to make the apparent cost of transit of grain from Chicago or any other speculative western grain market to the seaboard greater than the actually necessary cost, or greater than the expense actually borne by the grain in transit, it is scarcely possible to avoid the impression that the difference in the price of wheat between the western market and the market at the seaboard or in Europe was, and is, less than the cost of transit, including unavoidable commissions and insurance. The implication of the available figures for transit and local charges, even after they have been scaled down freely, is that the traders in the western markets pay more for wheat, on the average, than they realize from it. So anomalous a state of business is, of course, not easily credible, but it would not be easy to disprove its presence.

³ A curious fact to be noted in 1884-5 with respect to the course of wheat prices—and in 1888-9 it occurs again, and more markedly—is the decline that took place

The years from 1884 to 1887 were, as a whole, rather featureless in wheat. The market was prevailingly dull and heavy, and generally disappointing to Chicago operators. On the whole there was a decline during these years. There was scored in 1887 the lowest yearly average that wheat has reached, in Chicago, during the period since the Civil War. During these four years (1884-7) No. 2 wheat never rose to \$1. It fluctuated with the seasons and the crop reports, generally between 70 and 90 cents, but without any sustained advance.

1888, or rather the later months of 1888 and the early part of 1889, was a season of high prices, as compared with immediately preceding years. It was also a period of high prices in Chicago and in the western markets generally, as compared with the course of prices in the Eastern and European markets. The yield for the year was rather low in the great wheat regions of America, perhaps especially so in the country tributary to Chicago; and the European crop was also under average. But the reason for wheat ruling higher in Chicago than elsewhere is not to be sought mainly in the crop returns of the year; although the spring wheat region of the Northwest, and the trans-Mississippi states generally, harvested an exceptionally small crop of low grade, as was also, to a less extent the case that year with the Ohio Valley group of states. An advance in wheat set in about the time the spring wheat was harvested, and during the month of September operators on the Chicago market achieved the most remarkable corner in wheat that has ever been recorded. The price then advanced from about 90 cents in early September until the last week of the month, when it jumped to \$1.60, and

in Chicago prices, relatively to prices in the New York market, immediately after they had been held up to an unwarranted figure for a time by speculation. Although the average for the year in 1884 was 83 cents, the price fell as low as 69½ cents in December, and closed at about 72 cents. It opened at 72¾ cents in 1885, and only in the spring of that year did it again rise to the level of 83 cents, about which it fluctuated from that time on. This season of decline was out of harmony with the export market. The average Chicago price was lower in 1884, apparently in consequence of its having been too high in 1883 and early in 1884, than it was the following year; while the price in New York, and still more distinctly in Liverpool, was lower in 1885 than in 1884. The movement in 1888-9 is quite analogous.

even touched \$2. With the advent of October, when the operations of the speculators had borne their fruit, it fell by one-third or more, and ruled at \$1.16-\$1.17 for the first week of the month. From that point it receded, irregularly, in spite of the efforts of the local operators, and the year closed at about 99 cents. Thence the course was irregularly downwards through the succeeding year, with a temporary advance to \$1.08¾ in February. Since 1887, the general course has been upwards, culminating, apparently, in the comparatively high average price obtained for the crop of 1891.

The factors which have determined the general course of wheat prices since 1882 have been large and strong, with few disturbing causes. The fact of greatest weight, and most characteristic of the period, has been the relatively large supply. A glance at Chart IV. will show that this increased supply was not due to an increased output in America. Since 1880 the American wheat acreage has been practically stationary, taking the country as a whole. American yields have also not been nearly up to the average of the preceding ten years. The harvest has varied from year to year during this decade in much the same way as ever, but the harvests, both of wheat and of other staple crops, have run at a distinctly lower average than during the seventies. It is even safe to say that, while the run of crops in wheat, and to a great extent also in corn, was on the whole over a normal average during the seventies, it was below normal, perhaps in about an equal degree, during the decade 1881-90.

There is a further contrast between the run of wheat crops for the two periods. The earlier ten years were distinctly more favorable for winter wheat than for spring; so much so that the unusually high average for those years was due entirely to the exceptional excellence of the crops in the winter wheat region. The spring wheat of the Northwest during the seventies was, if anything, slightly below the normal average, taking the period as a whole. During the eighties—1881 to 1890—there was no such marked difference in the condition of the two

classes of grain. Both varied from year to year, and the two did not vary with even pace, but on the average the seasons were no less favorable to the one than to the other. There were extreme local variations, such as the bad year of 1887 in Kansas and other states of the same group, and 1890 in some of the states beyond the Mississippi, as well as in the Ohio Valley; and, taken in conjunction with the unsatisfactory general run of staple crops and prices, the very moderate or deficient yield of wheat was an active factor in producing the severe depression in the West through the closing years of the eighties. But if regard is had to the wheat crop alone, it is to be taken that all the great wheat areas fared not unequally during this period.¹

The characteristic features of the situation as affecting the course of wheat prices since 1887 have been: (1) crops, both of wheat and of other grains, have, in general, not varied widely from the normal; (2) very efficient means and methods of production have been in use, as compared with ten years earlier (for this country, especially, this applies to the production of other staples than grain in nearly an equal degree); (3) the means of transportation and communication in use have also been of a much greater efficiency, especially as affecting other exporting countries than the United States, and a steady improvement in this respect has been in progress during the entire period; (4) hence has resulted the definitive inclusion of the crops of practically all wheat growing countries in the supply that goes immediately to affect the price of wheat in any particular market; (5) a further effect of these mechanical, technical improvements, acting in conjunction with the improved business methods now in use, has been a diminution of the stocks customarily kept on hand; (6) as a consequence of the facts enumerated, there has been, especially during the earlier years of the decade, a distinctly

¹ A review of the European crops from 1880 to 1890 will show the period to have been of a fair average character, with wheat rather more satisfactory than other grains and slightly over the normal average. Europe therefore came distinctly nearer supplying its own bread during these years than during the preceding ten. At the same time a greater proportion of the European crop had become immediately available in the general market.

larger available supply, relatively to the demand, than was offered in earlier years; (7) there has been an absence, relatively, of sudden and radical industrial changes immediately affecting grain production; (8) a very considerable decline in the prices of staple commodities has taken place, with a consequent prevailing weak or depressed tone in the industrial situation generally.

Certain minor factors have also affected the general course of wheat prices. Notable among these is the imposition and continued increase of heavy import duties by France, Germany, Italy and Spain. To what extent this factor has influenced the prices obtained by the American producer it is impossible to say, even approximately. Yet there is no question but the effect has been to limit the demand and lower the price, although probably in a very slight degree. The slightly heavier scale of duties of the American tariff on staple commodities, since 1883, has probably acted in the same direction on grain prices in the primary markets, though the effect of the increase can not have been at all considerable.

As already noted, there was no great radical change directly affecting the production of wheat during the years after 1881, except the change in prices. But while the change in price was so nearly the only great change of the period, that change was unprecedented in magnitude and character, and the resulting, or, perhaps some would prefer to say, the accompanying change in the movement of the wheat acreage in this country has been no less serious and unprecedented. The total acreage sown to wheat, which for a series of years previous to 1880 had habitually increased by a yearly addition of something like ten per cent., practically did not increase at all, in the aggregate, from that time until 1891.

This result was not reached by a general and uniform cessation in the extension of wheat growing over the entire area in which wheat is largely grown. The acreage under wheat increased, on the whole, considerably in the prairie states and on the Pacific slope, and decreased to approximately the same

extent in the Eastern and Ohio Valley states; but, without exception, in each of the groups of states represented in Chart V. the acreage under wheat suffered a serious diminution in 1885, immediately following the great permanent fall in price. This was the year of smallest wheat acreage since 1879, and shows the effect of the steep and protracted decline in prices during the years immediately preceding; though the price is not answerable for the whole of the diminution of area. Something is due to the very bad winter of 1884-5, which perceptibly diminished the acreage of winter wheat by "winter-killing." In 1886 there was a partial recovery in wheat acreage at all points; but the rate of increase in the sections where increase has taken place has been less from that time until 1890 than it had been previously, while at the same time the decrease in acreage in the great winter wheat states has been less pronounced since that time than before (see Chart V.).

The other great American grain crop—which might also be called the great meat crop—is corn. The alternative, though by no means the only alternative, offered the wheat farmer is the production of some form of animal product. And a comparison with the movement of the corn acreage for the same period will show, approximately, the relative attractiveness of wheat and other farming in the wheat growing states. It is to be taken, with some not inconsiderable qualification, that any conspicuous increase or decrease in the corn acreage indicates a corresponding movement in stock farming, taking the word in its broader meaning. If the line for corn acreage were traced, it would show a very strong and remarkably steady upward movement from 1871 to 1886. Since 1886 the corn acreage has fluctuated, rather than scored any distinct advance. The increase in the total acreage under corn since 1880 has also been due, for the most part, to an increase in the states west of the Mississippi, although there has at the same time been some increase in the South. The corn acreage of the Ohio Valley states has been, on the whole, stationary or slightly declining since that year. For the other minor grain crops, the movement has not been notably dissimilar from that of corn.

On the whole, therefore, wheat has lost since 1880, relatively to other crops, in all the great wheat growing sections ; more distinctly so in the Ohio Valley group of states and the more southerly states west of the Mississippi than elsewhere ; and this relative loss took place, chiefly, during the years before 1886.

The exact area sown to wheat in any given year is not to be accepted as an unfailing index of the relative attractiveness of wheat growing at the time, as compared with other crops. The weather and the condition of the soil at the time of sowing have something to do with the number of acres sown, and the extent to which wheat has been winter-killed, and the land resown to other crops, may perceptibly influence the breadth of the crop. But taking one year with another, the breadth of the wheat area affords a pretty fair indication of the relative profitableness of wheat growing.

In the great winter wheat states and in the states immediately west of the Mississippi, there was, during the eighties, a very distinct movement towards a diversification of crops, to the partial neglect of wheat. The greatest single factor which has acted to bring about this change has been the decline in wheat prices; but other factors have acted in the same direction, for the most part with a slow, cumulative effect, and it is very difficult to say how much of the aggregate effect is to be attributed to any one cause. Stock growing continued to divert farmers from wheat to corn, though apparently rather less extensively than during the later years of the seventies. The climate of the northwestern states bordering on the Mississippi has been less favorable to the growth of spring wheat for some years past than it was years ago. The chinch bug has also been much more troublesome in the older spring wheat region than used to be the case. But the most efficient factor making for a change has been the economic or industrial factor proper.

The older wheat states are virtually nearer to a market for other, less easily transported, products now than they were ; and the greater capital required, especially in permanent investments—the plant necessary for a system of mixed farming—is much

more readily at the command of the farmers now, either through their own accumulations or through easier terms of borrowing.

A simple juxtaposition of the lines traced by the prices of wheat and of other staples, therefore, is by no means sufficient for a comparison of the relative profitableness of wheat and other farming under the changed conditions of the last decade as compared with the seventies. The lines of the charts afford a sufficiently accurate indication of what has taken place in the Chicago and New York markets; but the local markets, while in a general way running a course parallel with that of the general markets on which they depend, are not affected in the same degree for each staple by the changes in the situation that go to make the variation in price. As a whole, prices in the primary markets have tended to approach nearer to those in the general markets—the former have tended to rise relatively to the latter, but not equally for all staples. In a general way, the improvements that have been going on in transportation and communication have had a relatively greater effect on the less transportable articles. So that, wheat being practically the most easily transportable of our farm products, these other products have been left in a relatively more favorable position by the aggregate of changes that have taken place than the course of prices in the general market alone would indicate.¹

The outcome of the movement has been that, as regards the older states, wheat growing has been relatively (and probably, as counted in money, absolutely) less profitable since 1882 than during the preceding ten years, even apart from the distinctly less favorable run of seasons during the later than the earlier period. Wheat has recovered some of its lost ground during

¹ "Farm prices," as given in the annual reports of the Statistician of the United States Department of Agriculture, go to corroborate this view. Lines traced by farm prices (prices in the primary markets as reported by correspondents of the Department) might be given, showing that, while in the general markets the course of prices has apparently, on the whole, favored wheat relatively to other staples, in the local markets the reverse is true. Indeed, a somewhat detailed comparison, of which there is space here for nothing beyond the most general statement of results, shows that so far as these Department "farm prices" are an adequate indication of the course of the local markets, wheat during the eighties suffered a very distinct depreciation relatively to other staple farm products.

the last two years. With respect to the newer wheat lands of the West the case is not altogether similar. The legitimate effect of the course of prices, as of other factors of a general character, on wheat growing, both in the Northwest and Southwest during the later eighties, was obscured by the occurrence of several abnormally bad seasons. Also, the new lands over which wheat growing has been extending in the West since 1881 offer the most easily tilled, and, for a series of years at the start, the most fertile of all American soils. The cost of production of wheat, apart from its delivery to the general market, is therefore less on these new lands than on any large area that has been under wheat before; and wheat growing has been extending, and profitably, too, in an average season, while selling at prices that would not have been remunerative for wheat grown elsewhere as a main crop.

To sum up: The indications afforded by the course of prices are that since the completion of the great decline in prices of farm products, 1884-5, wheat growing in the older wheat states has held a less favorable position, relatively to other farming, than it did during the seventies. All accounts converge to the support of that view. But it is doubtful whether, in the great winter wheat states of the Ohio Valley group, a relatively large acreage of wheat in a system of mixed farming has not continued to be more profitable throughout the whole period than a system which should tend to discard wheat growing as a staple crop; while it is to be taken as practically beyond doubt that with the changes of the last two or three years wheat growing in those states is again normally a profitable investment.

The spring wheat states bordering on the Mississippi on the west are a case by themselves. From local causes, wheat growing has not been, relatively, a profitable branch of farming there the last few years. Of the newer wheat lands of the West it is to be said that wheat growing, with an average run of seasons, is undoubtedly profitable; rather, it is almost the only crop that can be profitably grown there by the farmers at present settled on those lands and under the present circumstances.